EDITORIAL INDEX—PAGE 31

COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

JUNE 1947

YOU CAN SERVE YOUR CUSTOMERS BETTER

with a truck like this!

Here's a picture of a "*Job-Rated*" truck . . . a truck that fits its job.

Take a good look at it!

This truck has exactly the right one of 7 Dodge "*Job-Rated*" engines to provide the pulling power the owner needs, with the economy he wants.

It has exactly the right one of 5 Dodge "*Job-Rated*" clutches, 4 transmissions, 18 rear axles . . . the right units throughout . . . for "top" performance with the loads it carries, over the roads it travels. It is completely "*Job-Rated*" to fit its job . . . to last longer, and for dependable, money-saving operation.

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To get such a truck, see your Dodge dealer. He will analyze your needs. He will recommend the right truck. He will serve you well . . . including dependable truck service whenever you need it. . . . See or call him today.

ONLY DODGE BUILDS "*Job-Rated*" TRUCKS

DODGE

Fit the Job . . . Last Longer !

COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

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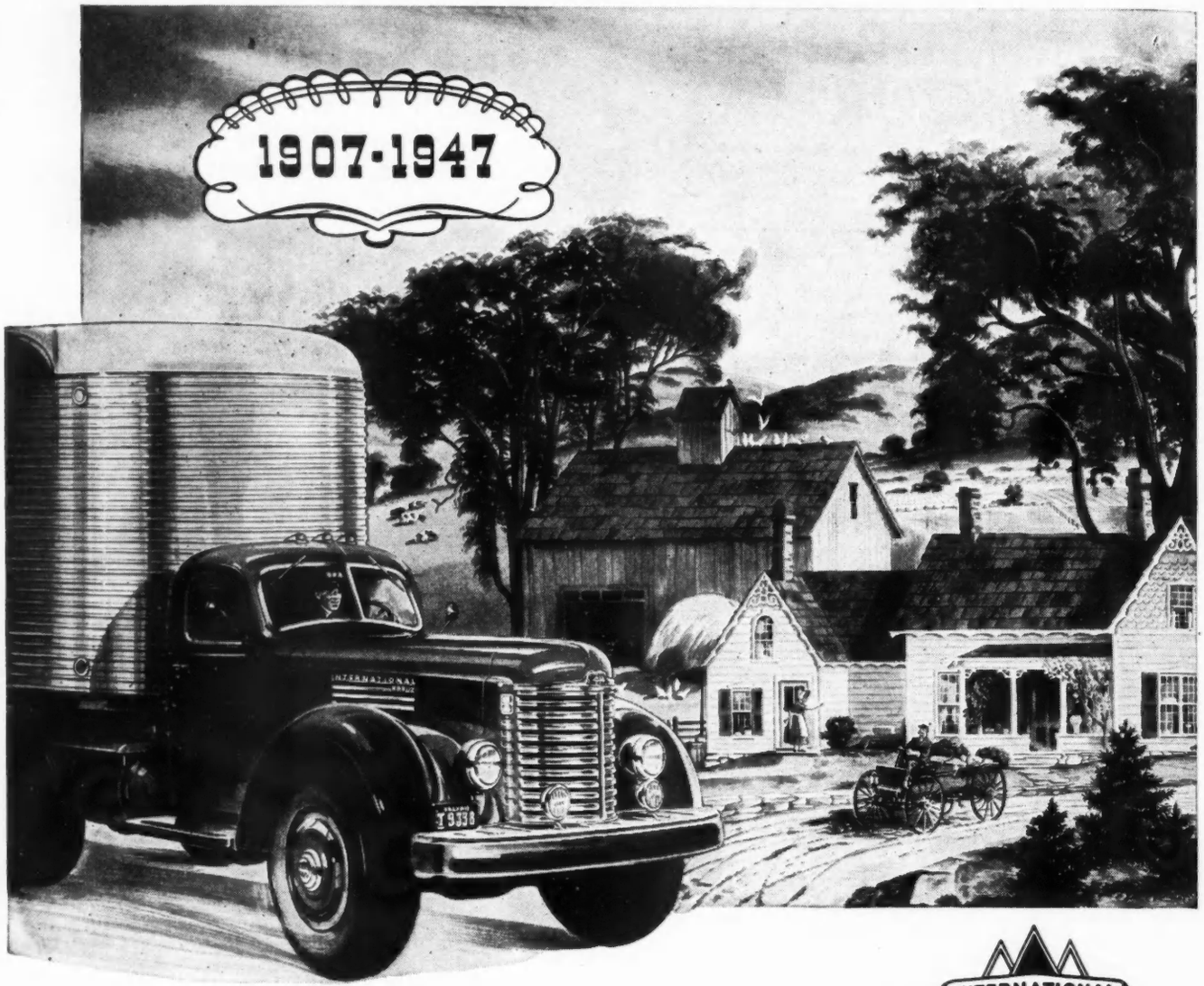


INTERNATIONAL

The 40th Anniversary of INTERNATIONAL TRUCKS

This year, 1947, is International Harvester's 40th Truck Anniversary.

FORTY YEARS of International Truck progress, hand-in-hand with the progress of American transport.

FORTY YEARS that have seen the development of the International Truck Line from a single wagon-like vehicle. Today the International Line is the most complete built by any manufacturer. It includes 21 basic models with gross weight ratings ranging from 4,400 to 90,000 pounds. These 21 basic models convert and adapt into more than 1,000 different transport vehicles.

FORTY YEARS that have seen the rise of International Trucks to enviable leadership. For the last 16 years more heavy-duty Internationals have served American industry than any other make.

Yes, the forty years of International Truck history have been years of progress. This progress culminates today in International's great, new Fortieth Anniversary Line of Trucks—International KB Models.

Forty years of progress, with greater goals ahead.

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

Tune in James Melton on "Harvest of Stars" Sunday—NBC Network

INTERNATIONAL *Trucks*

CCJ READER DIGEST

DO YOU KNOW THE ANSWERS?

What are fleets doing about their road failures?
See Page 49

What will synthetic oils do for your engines? See two fleets' experience
Page 61

Are you having unsatisfactory results with Heavy-Duty oils?
See Page 46

What are the advantages in time and money savings of mobile telephone?
See Page 71

Are you experiencing premature tire wear and steering troubles?
See Page 57

Are you familiar with the Lenoir Case?
See Page 70

Compact Shop Layout

by HARRIE H. BIERMAN

STEPPED up overall efficiency keynotes the new quarters recently occupied by the Ryder Trucking Co., Miami, Fla. They consist of a 40x50-ft. office building of poured concrete and steel, and a 100x135-ft. shop of the same construction. Between the buildings is a 30-ft. alley in which is located a concrete gas island.

The office has a corridor separating private and general offices on either side. The dispatcher's office is in the rear; one window overlooks the gas island and all traffic, other windows give a complete view of the entire yard in back. There are many worker comforts such as air conditioning, sound-deadening tile floor, fluorescent lighting, etc.

The shop has three rolling-type metal doors; 5x8-ft. windows, closely spaced and glazed with glare-and-heat-excluding blue glass. Still more light is supplied by two rows of continuous-strip heat-and-glare-filtering skylighting, which extends for most of the roof length. Roof is of the steel desk type, treated to make it insulating and moisture resistant, which provides high tensile strength with light weight—especially good in areas subject to high winds and heavy snow falls. Uniform ventilation is provided by a cylindrical ventilator, installed in a horizontal position and damper controlled. Area devoted to general maintenance is unobstructed by columns, specialized services are departmentized and partitioned where practicable. (See Page 38.)

Rubber Round-Up

by LEN WESTRATE, CCJ Detroit News Editor

THE TIRE industry is back to prewar normal conditions. Meaning that fleetmen can get the tires they want in almost every size and that they are better tires than ever before in history. Pricewise it means that fleetmen are already getting lower prices through a return to competitive bidding.

Tires now carry a natural rubber content from 23 per cent in small passenger car sizes to 100 per cent in 11.00 and up with 94 per cent being the figure for sizes from 8.25 to 10.00. Extensive use of rayon and nylon cord is being made in truck sizes and in premium-priced passenger car types. But no one is willing to say that the day of cotton fabrics is passed. New models feature wire cord with unusual heat-resistant qualities and tests are being run with fibre glass and even a tubeless tire. See page 40.

A Mid-Way Shop

by A. DELARUE, T.S.C. Motor Freight Lines

ONE of the things that make our maintenance and repair program different from others is that we approach it from a different angle—concentrating on a 15,000 mile inspection that covers everything from steam cleaning to the installation of special bumper guards. The emphasis is on anticipating trouble before it happens and making the necessary repairs or replacements to keep the vehicles out of the shop longer.

About a year ago we located our main shop at Lafayette, La., a small town almost exactly half-way between our principal terminals at New Orleans and Houston. Here we have some excellent shop-made equipment including a revolving engine stand and a welded-pipe portable crane.

At the main shop we also have a complete unit rebuild system by means of which we can stock principal units for use either at the main shop or at any of several subsidiary terminals. Throughout the system we attempt to service adequately but avoid over-service. See Page 62.

Service Frequency

by T. L. PREBLE and D. H. ERMINGER

IN THIS pair or articles, T. L. Preble of Tide Water Associated Oil Co. and D. H. Erminger of International Harvester Co. continue the controversey of vehicle maintenance frequency and accessibility.

Speaking for the fleet operator Mr. Preble cites specific examples of design changes that have increased maintenance labor time. Among the highlights are increased number of grease fittings, decreased accessibility and a continuing need to devote a large percentage of shop time to a small minority of most frequent operations. Vehicles should possess built-in maintenance economies with particular emphasis on decreasing lubrication time and improvement of electrical systems, the most frequent cause of road failures.

Speaking for manufacturers, Mr. Erminger says engineering, designed for better maintenance and greater longevity costs money and the vast majority of buyers are not disposed to pay the higher price. He then cites a number of specific examples in both engine and chassis engineering improvements that have been made, despite the cost, to greatly lengthen service life. See page 34.

(TURN TO PAGE 93, PLEASE)

SERVICE

Fleet and Factory Views

Spokesman for Fleets: *T. L. PREBLE*
Supervisor of Automotive Trans., Tide Water Associated Oil Co.

Vehicles Should Possess Built-In Maintenance Economies

ATTENTION of the designers and the manufacturers respectively is directed to the problems of maintenance and of its increasing costs.

It is difficult to escape the conclusion that further maintenance economies must be designed and built into commercial vehicles at the factory. In other words, maintenance economies no longer can be classified, or sold, as "extra equipment."

Fleet proving ground experience suggests two possible correctives:

First, vehicles can be designed and built so that they require maintenance operations less frequently.

Second, vehicles may be designed and built so that these necessary maintenance operations consume less shop time.

Through the years, design and manufacture have advanced tremendously and have made routine maintenance operations far less frequent. Results include the extension of productive running-time, curtailment of expensive down-time.

The second suggestion, however, is more complicated. Fleet operations engineers have endeavored to make the shop mechanic more efficient by providing more and better maintenance equipment. There seems to be no way of rating the overall gain from this investment. There is no way either of calculating the greater cost per mechanic per hour, or per vehicle per job, resulting from this increased shop overhead.

Possibly there is some gain, else so many operators would not make such substantial investments—investments which have made the manufacture and sale of maintenance equipment a major industry.

To a degree, the basic policy of designing and building commercial motor vehicles for operation rather than maintenance has become a boomerang. The better the vehicle, the more sensitive it is to adjustment, and the more difficult the adjustments. The better the vehicle, the more difficult and extended the maintenance operations. And the fewer the routine maintenance operations, the longer and more costly they appear to be.

More Labor Time

THOSE disinclined to accept these statements at face value may find substantiation in time studies. Take the case of 10 routine maintenance

(TURN TO PAGE 36, PLEASE)

Excerpted from papers presented at

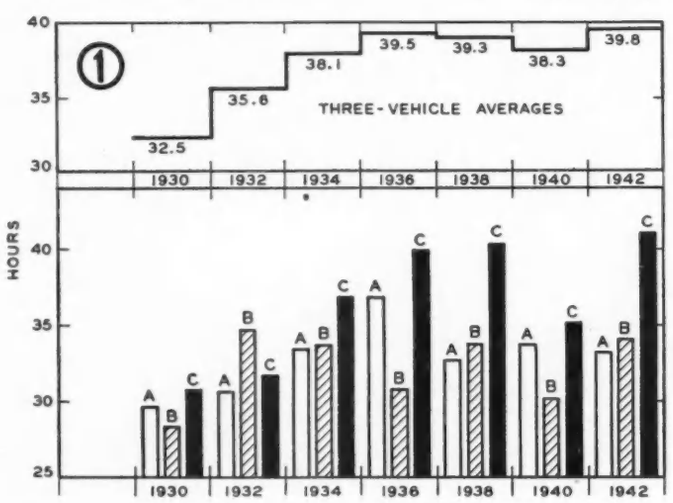


Fig. 1. Eight-year trend in "factory time" for 10 maintenance operations on three widely-used fleet vehicles

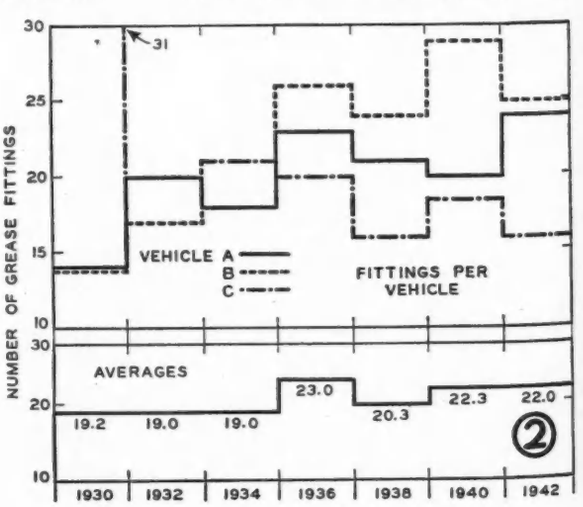
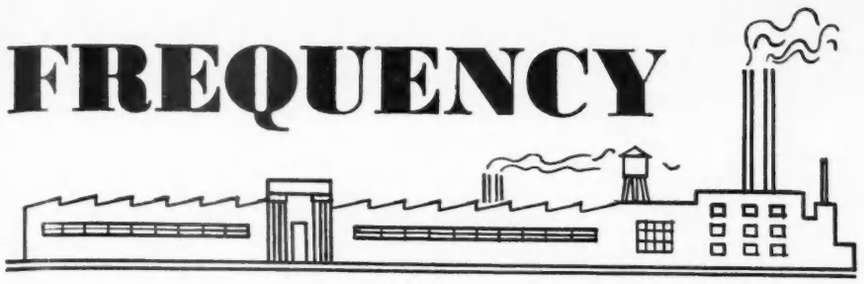


Fig. 2. Eight-year trend in number of grease fittings on different vehicles. Lower chart is average for all three

FREQUENCY



in a Continuing Controversy

Spokesman for Makers: *D. B. ERMINGER*
Manager Truck Service Section, International Harvester Co.

Truck Buyers Are Not Disposed to Pay the Higher Price

ELIMINATION OR DECREASE of the frequency, cost and difficulty of servicing operations is a secondary consideration in the minds of most of those who buy passenger cars and motor trucks. Disillusioning as it may be to those of us who work in the servicing field and think of our activities as having primary importance, we cannot escape this fact.

When faced with the necessity of paying an extra premium for longer-wearing parts and units or for service-eliminating innovations, the buying public as a whole cheerfully foregoes service advantages in favor of lower initial cost.

This very common human attitude of gruding the immediate dollar for a probable but deferred benefit complicates every step of our program.

Manufacturers must, if they are to remain in business in a highly competitive market, produce vehicles that will gain public acceptance. Low initial cost is a controlling consideration. That cost can be held down to a minimum only by high production methods that turn out large numbers of standard models most likely to meet the desires and the means of the largest number of buyers. And most buyers prefer vehicles that will perform well under more or less average conditions, using standard lubricants, and requiring customary servicing—provided the price is low.

In the truck field, this means that basic models are built for use under comparatively normal operating conditions.

Manufacturers are strictly limited by practical considerations in taking steps which might increase the cost of their equipment while offering no additional benefit to buyers other than that of probable lessening of service. Buyers are reluctant to pay any extra premium for this alone.

Bearing this limitation in mind, it can nevertheless be shown that manufacturers are constantly working toward the goal of producing vehicles that will operate more efficiently and with less frequent servicing.

SAE National Transportation Meeting.

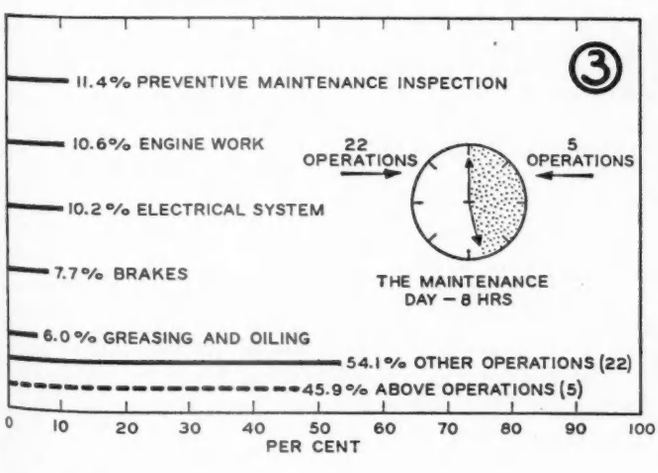


Fig. 3. Analysis of 27 maintenance operations based on 1000 driver-days. Note how five items enumerated, delayed by inaccessibility, consume 45.9% for shop time while 22 others consume 54.1%

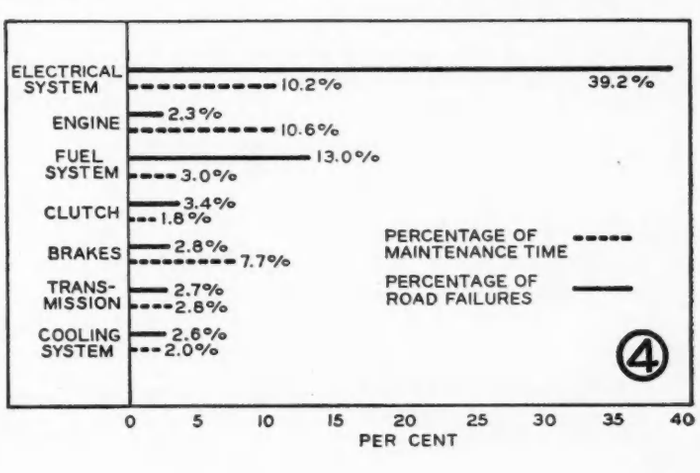


Fig. 4. Seven operations compared from standpoint of frequency of road failures and percentage of maintenance time. Electrical systems lead in failures, are close runners up in shop maintenance time

Engine Improvements

THERE has been constant improvement in engines as higher octane gasoline has become available. The higher compression engines of today deliver more horsepower per pound of engine weight. Simultaneously great improvements have been made in valves designed for longer life with less service. Hydraulic valve

(TURN TO NEXT PAGE, PLEASE)

Service Frequency

(Continued from Page 34)

operations, essential to every vehicle regardless of make or model. Fig. 1 shows an eight-year trend in down-time for these operations as measured by factory time estimates for three different widely-used vehicles. It will be noticed that there is an irregular but persistent upward trend in the number of hours which must be devoted to this necessary maintenance work.

The upper portion of this chart shows the averages for the three vehicles. In each case the number of hours has been increased 10 per cent over factory estimated time. This increase represents a reasonable allowance for reduced productivity.

This chart of averages is especially interesting because it discloses the results of the general trend. Average maintenance time for the average vehicle is 39.8 hours in 1942 as against 32.5 hours in 1930. The labor cost in 1930 at 80 cents an hour was $26.00. The labor cost in 1942 at $1.40 an hour was $55.72. In 1930 two cars were given routine maintenance jobs for less than the cost of one job in 1942. It is obvious that it takes comparatively few of these increases in maintenance costs to make the operator sit up and take notice, especially of the cash register.

These data cover time and labor costs alone. They do not take into consideration the increased cost of parts. They do not incorporate the substantial expenses of down-time, whether in loss of productivity or rental for replacement vehicles. These costs in themselves have risen proportionately. And, however, great the disagreement with these figures, the trend is inescapable. It takes longer and costs more for maintenance.

Accessibility Highlights

ANYONE inclined to believe that the situation improves with post-war vehicles may face sad disillusionment. So far as can be ascertained, the trend is sharply upward. One passenger car, for instance, is designed and built so that the engine must be lifted from the chassis in order to remove the oil pan. Another has rear fenders welded in place. In case of fender replacement, body panels must be removed. These developments, whether they apply to trucks, buses, or passenger cars, are matters for serious concern. They involve folding money—and they are design factors of no inconsiderable pertinency. The fact that maintenance operations may be necessary only one-half as frequently is scarcely an excuse for making them more than twice as expensive.

Some maintenance operations are, of course, rather infrequent. However, this is not the case with lubrication, which is undertaken both frequently and regularly. Designers and manufacturers know that lubrication is necessary. They know how it is done. And it is not, ordinarily, a complicated operation.

Fig. 2 pictures the eight-year trend in the number of grease fittings per vehicle—calculated from the same three popular vehicles. Vehicle A started with 14 and progressed to 24. Vehicle B started with 14 and reached a peak of 29. Vehicle C was a maverick. It started with 31 and got down to 17.

The trend, however, is shown by the averages—an upsweep to 23 from 19. Actually, the trend is worse than can be shown here. This chart cannot evaluate the factor of accessibility. Here again there can be serious increases in maintenance costs, and it is not unreasonable to suppose that doubling the number of grease fittings could triple lubricating time.

Accessibility is a tremendously important factor, a potent influence on maintenance time and costs. It is unnecessary here to catalog the inaccessible parts, and inspection points, and adjustment points of the commercial vehicle. Designers and manufacturers must know them pretty well. Indeed, they have special factory equipment, seldom available to operators, for easily accomplishing feats which, in the shop, demand special tools, considerable time, and mechanics who combine the talents of contortionist, acrobat, magician, detective, and saint.

To further substantiate this point reference is made to Fig. 3 based on material developed by Willard D. Bixby, Ralph M. Werner, and Harvey H. Earl, of United Parcel Service. It shows the time consumed in performing five routine maintenance operations. Fig. 4, from the same source tells the story visually. From this chart one might gain the impression that vehicle electrical systems do not react well to maintenance.

Five Conclusions

IT WOULD seem, if we are to keep our highway transport balanced, and if we find it desirable that fleet operators should stay in business, that we might reach these conclusions:

1. Accessibility is a valuable attribute of every vehicle, from the standpoints both of economics and engineering.
2. Accessibility should be improved whenever and wherever possible.
3. Engineering attention should be directed to improving the electrical and fuel systems, and other parts which do not now respond properly to maintenance, that they may serve equally as well as engines, brakes, and other heavy working parts already do.
4. Something should be done to shorten the time required for the maintenance operation of lubricating; 6% of maintenance time seems much too long.
5. An SAE committee might be created to undertake the basic job of coordinating needs, ideas, and possibilities of (a) increasing accessibility and (b) curtailing the time and cost of maintenance.

Maker's Viewpoint

(CONTINUED FROM PAGE 35)

lifters and automatic adjusting attachments to keep valves rotating and free of carbon and deposit formations are recent innovations.

Main and connecting rod bearings today are far superior to anything we had in the past. They are precision type bearings of superior material that require no adjustment and that will operate at higher speeds and higher oil temperatures for much greater periods of time.

(TURN TO PAGE 278, PLEASE)

The OVERLOAD

1. A Cure for Road Failures

2. Weight Gains Benefit All

by ***GEORGE T. HOOK***

Editor

1. THEY SAY that a quick cure for a sore throat is to cut it. And it would seem that a quick cure for the majority of road failures is to tear out the electrical and fuel systems the moment a new truck is delivered and replace them with quality units. That, at least, is the impression one gets after reading the fleet road failure survey published elsewhere in this issue.

* * *

Fleets all over the country participated in this survey and reported that electrical and fuel systems were their principal causes of truck road failures, with tires, axles and clutches next in line. These are the very causes of road failures that have been plaguing fleet operators for years. What can be done about them? Why isn't something done about them?

* * *

When asked to suggest what truck manufacturers might do in order to reduce the causes of road failures, fleetmen who participated in the survey came through with a variety of suggestions in which such terms as "better, heavier, larger and heavy-duty" predominated. The suggestions are published for all manufacturers to see. They indicate beyond doubt that, in the opinion of many fleetmen, inferior quality is at the root of principal road failure causes.

* * *

The suggestion of truck manufacturers, to judge by the remarks of their spokesman on page 35, is that buyers of trucks stop making their purchases on the basis of initial cost. He says that the vast majority of truck buyers cheerfully forego costlier service advantages in favor of lower initial cost. This factor, in a highly competitive market, compels manufacturers to hold costs down to a minimum and to turn out large numbers of standard models most likely to meet the desires and the means of the largest number of buyers.

That, of course, is gospel, and it is tough on fleet operators because they are in the minority. Even if they were willing to pay more for units that would be much less susceptible to road failures, their wants could not be considered in the setting of overall policy.

* * *

Fleet operators are much too resourceful to be seriously affected by virtue of being a minority. The squeaking gear in time gets the grease, and fleetmen can be counted on to continue squawking for better equipment, proving the validity of their complaints with figures and thereby needling manufacturers into making improvements a little more rapidly than might otherwise be the case. Short of going broke, truck manufacturers can be counted on to do all in their power to keep fleet complaints from turning into ex-customers.

* * *

Meanwhile, fleet maintenance departments will continue to battle with the causes of road failures and to compensate for the shortcomings of original equipment. Their's is the task of getting all possible mileage out of equipment as it comes to them originally, and, when road failures start, of making replacements with "better, heavier, larger, heavy-duty" items.

* * *

2. **THE LAYMAN supposes that whenever a bill to increase allowable gross weights of trucks is introduced in a State legislature, all truck operators are willy-nilly passionate advocates and supporters of the increase. Would that it were so.**

The truth is that the divergent interests of truck users cause them to have divergent views. Particularly is this true where grosses of combination units are concerned. Most private truck operators (we are not now speaking of the fleet field alone) use four-wheel vehicles, and the higher grosses don't interest them. In the fleet-field, many private truck operators have combinations of their own. So their interest is warmer. Besides, many of them are shippers, and they reason that higher grosses eventually mean lower unit transportation costs. They are in favor of the latter, so they support the former.

* * *

It is among for-hire truck operators that a surprising attitude prevails. Common carriers always seek and support higher maximum grosses. They mean greater loads, greater revenue, greater profits.

* * *

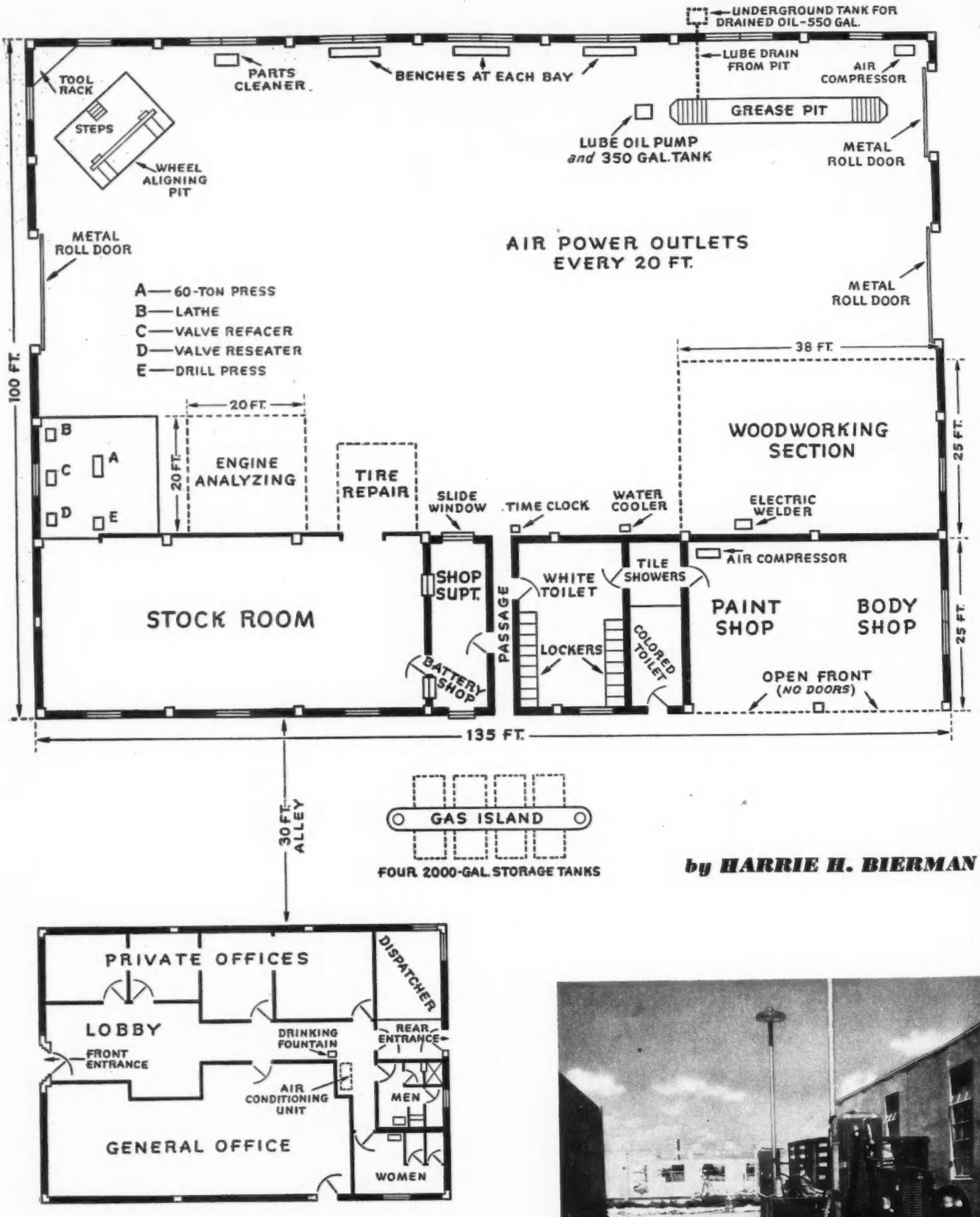
But contract carriers frequently must be prodded to lend their support to higher grosses. Their view is that whatever they get in the form of larger permissible weights, they eventually are compelled to give away in lower rates. The net gain to them, they figure, is nothing. So why bust a gut on the politicians.

* * *

It is to the credit of many contract carriers that they do not see "net gain" solely as so many dollars in their own pockets. They see as part of the net gain, an overall benefit to highway transportation, an overall benefit to the national economy, a sharing of gains with manufacturers and consumers. With this social-minded attitude they pitch into the politicians.

* * *

This is the attitude that all contract carriers, and all private operators should have. Our national economy is so interwoven that what benefits one segment of it, will benefit the whole.



by **HARRIE H. BIERMAN**

*Illustrated at right is the gas island shown above between buildings

Compact Shop Layout

Spots Facilities for Maximum Efficiency

Related services grouped conveniently,

maintenance area free from obstructions,

gas-oil-air-water island well located;

design also features many worker comforts

STEPPED UP overall efficiency keynotes the new quarters recently occupied by Ryder Trucking Co., Miami, Fla. And the improved operating conditions apply to both the general business and the maintenance parts of the operation.

The firm's new plant consists of separate buildings for office and maintenance. Both are of poured-concrete-and-steel construction. The office building, 40x60 ft., was planned with the efficiency angle firmly in mind.

At the front of the structure is a reception room with a PBX switchboard. From this, a central corridor runs to the dispatcher's office in the rear. Private and general purpose offices lead off from the corridor on both sides. Floors are surfaced with sound-deadening, long-wearing, asphalt tile in marbled brown and yellow.

Lobby, corridor and offices are fluorescent lighted. For example, the dispatcher's office, 9½x13½ ft., is illuminated by three such fixtures—two dual 40's and a dual 20, a total of 200 watts.

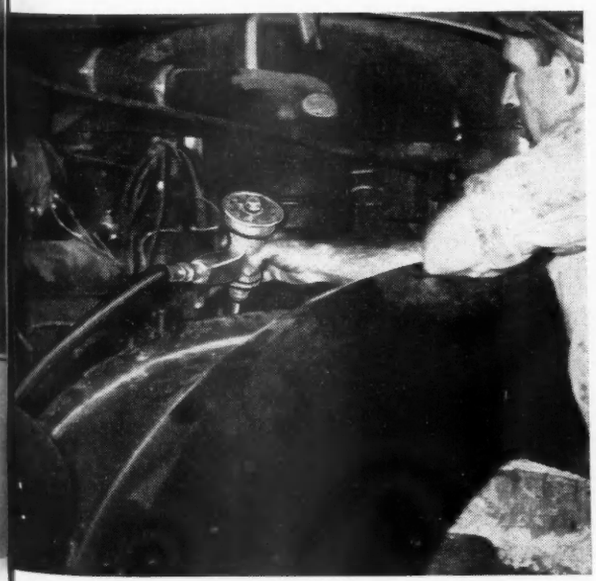
The building is air conditioned throughout. Incidentally, in a near-tropic climate, air conditioning is an important adjunct to working efficiency. To provide a free air-circulation, the bottom panels of all interior doors are louvered. Temperature control is effected by means of a Chrysler 5-ton unit. In the corridor, near the latter, is an electrically-cooled drinking fountain with foot pedal control. Thus, a clerical worker with both hands filled with books and papers can grab a drink of water, while in transit from one office to another.

Concrete Gas Island Outside

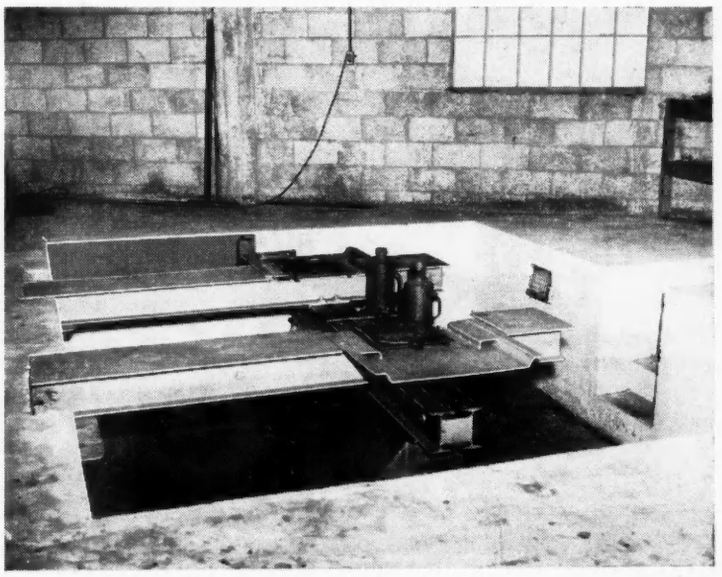
SEPARATING the office structures is a 30-ft. alleyway, in which is located a concrete gas island. On this, two electric gasoline pumps are spotted. A 10,500-gal. tank, under-

(TURN TO PAGE 116, PLEASE)

This time-saving engine oil dispenser is located at the side of the lube pit



This is the wheel-aligning pit, 10½ x 14½ ft., shown in upper left hand corner of shop plan



Rubber Round-up . . . . .

THE TIRE INDUSTRY is back to normal prewar conditions. That is very evident these days in visiting tire manufacturers and listening to their various claims and counter claims about their products. A visit to Akron, center of the tire industry, a year ago found all manufacturers in amazing unanimity on practically all questions of tire composition and manufacture. At that time, government controls were still in effect and all were bound pretty much by the same rules. In addition, the industry had worked together in close harmony during the war, solving the critical rubber problem and undoubtedly the effects of that harmonious relationship still were being felt.

With a competitive market moving up and a coming scramble for business to keep the expanded production capacity of the industry going full tilt, the tire manufacturers now resemble the man who got on his horse and rode off in several directions at once, at least when it comes to discussing the relative merits of their product.

In general, everyone agrees that better days are ahead for the truck operator insofar as reduced tire mileage costs are concerned. This is so because today a much better product is being built than was available either during or before the war and because prices, while higher than prewar, are going to come down. Chief reduction in price will be in the form of a much better bargaining position for the fleet operator. In fact, it already is reported that large buyers in some areas have been able to buy at lower prices through competitive bidding. While there are some areas where certain sizes are short, these are tending to disappear rapidly and fleet operators everywhere soon should be able to get choosy and shop around for the best possible price.

The greatest demand now in truck tire sizes are 7.50-15, 6.50-16, and special purpose tires. However, in size 8.25 and up, used by over-the-road haulers, the demand is pretty well caught up. The tire industry expects a 30 per cent drop in replacement sales in 1947 over 1946, with the replacement figure estimated at 7.5 million compared with 10.8 million last year. This indicates that the industry has capacity to produce more truck tires than it has a ready market for, which is a very healthy situation for the truck tire buyer.

Truck Tires Are Tops

TRUCK tires undoubtedly are much better today than they have been at any time in history. Sizes 8.25 through 10.00 are now allowed to use 94 per cent natural rubber and sizes 11.00 and up now have no restriction as to the amount of natural that may be used. Size 6.50 and up now may carry 67 per cent natural and passenger car tires up to 6.50 are allowed a maximum of 23 per cent. It is interesting, however, that various manufacturers are very cagey about divulging what percentage of natural rubber they now

• • • *Reveals:*

1. ***Best tires in history coming up***
2. ***Fleetmen already in good bargaining position***
3. ***Natural rubber content between 23 and 100%***
4. ***Rayon and nylon being used extensively***
5. ***. . . but not to the exclusion of cotton***
6. ***Heat-resistant wire cord tire ready***
7. ***Recapping here to stay***
8. ***Tubeless tire on trial runs***

by LEN WESTRATE
Commercial Car Journal Staff Correspondent

are using. Furthermore, the "S" markings, so prevalent during the war to indicate synthetic content, no longer are used. However, a pretty safe guess is that most of the companies are using the full amount of natural rubber allowed.

Another factor that is responsible for a better truck tire today is the experience in compounding that stemmed from intensive rubber development during the war. This, together with better carcass design and widespread use of rayon cord for increased strength, has brought about a very considerable improvement in tire quality.

Rayon vs Nylon vs Cotton

THE COMING sales battle, however, appears to be shaping up over what cord materials are used. At present, Goodyear has a 100 per cent nylon cord truck tire at a premium price, General has a 100 per cent rayon cord heavy duty truck tire (also premium priced), Goodrich is featuring a truck tire with a nylon shock breaker strip at no increase in price and Firestone has a wire cord tire at a 75 per cent premium, in addition to an all-rayon truck tire.

Goodyear estimates that its 12-ply, all-nylon carcass has 50 per cent greater strength than a comparable casing of the best rayon cord. Other advantages of all-nylon tires are their great resistance to bruising, resistance to heat, lighter weight, and greater heat dissipating characteristics. A year ago, Goodyear told CCJ that while nylon was the ideal cord material, it had a tendency to grow in the tire while in use. This characteristic has been "tamed" through a new processing method which uses heat and pre-stretching.

There is general agreement in the industry that nylon has wonderful possibilities but there are two principal obstacles barring its immediate and widespread use. First is the matter of supply which is very short at present. Actually, Goodyear is building its all-nylon tires on a very limited scale and they possibly will not be available in large supply for a long time. Second factor is cost of the material which currently is about three times as high as rayon and five times the price of cotton. Tire men point out, however, that when they first started to use rayon a few years ago the cost was $5 a pound but it is now down to 53 cents. They predict that with increased production facilities and with greater use, price of nylon also will come down to a reasonable level.

Goodrich is apparently committed to the idea that it is better to distribute the scant nylon supply through more tires by the use of a two-ply shock shield directly under the tread to protect the underlying rayon cord plies. Since the nylon is extremely strong, it protects the underlying plies against bruising, with its resultant frayed or broken cords. This feature is an important factor in the number of recaps that can be obtained.

Wire Cord Quandary

APPARENTLY the biggest difference of opinion among the tire manufacturers is the practicability of the wire cord tire for over-the-

(TURN TO PAGE 160, PLEASE)

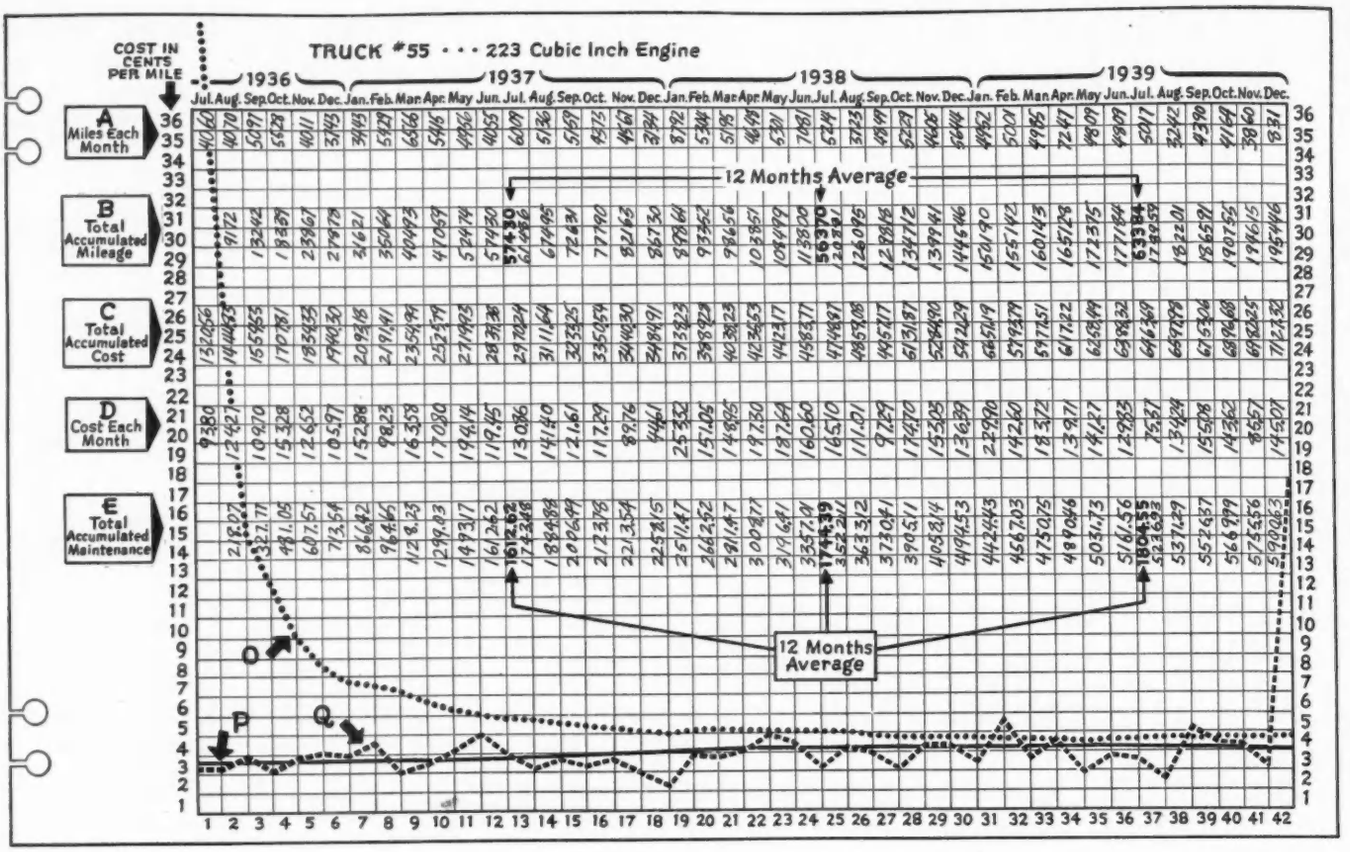


Fig. 1A, above. Reproduction of 11x17-in. form used by Orscheln Brothers to keep fleet cost and mile-age data, and to indicate proper trade-in period for each vehicle. Boxed headings on left margin of form (not

Timing Truck Trade-Ins . .

SHAKESPEARE HAD A LINE written about men that is applicable to the trucking business, "There is a tide in the affairs of men which, taken at the flood, leads on to fortune." Likewise, there is a tide in the lifetime of a truck which—if taken at the flood and traded off—leads to better profits or more economical operation.

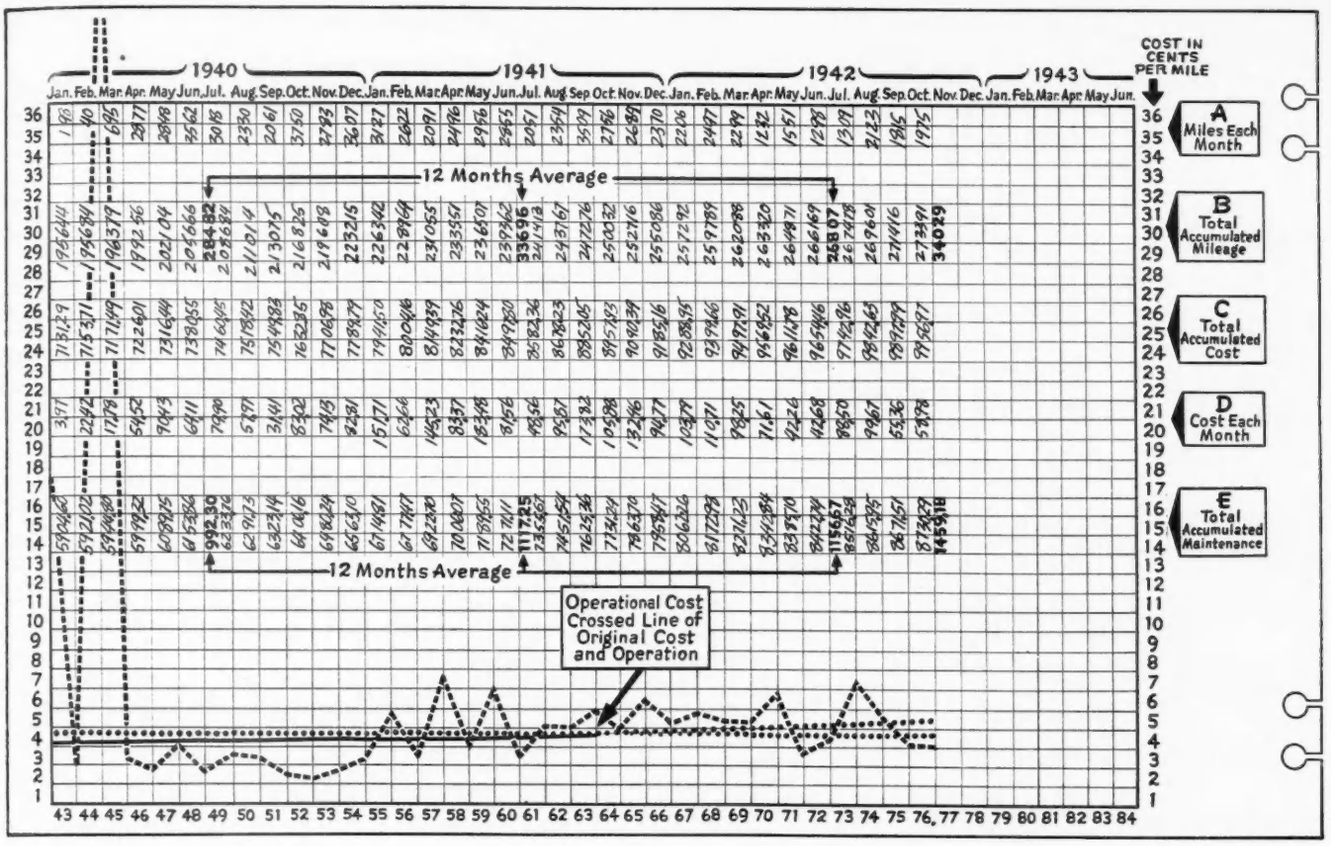
We talk about *our* trucks, *our* shops and *our* trailers but, after it is all shaken down, all it amounts to is that we have to pay a certain amount per mile of transportation. That certain amount is neither constant nor stationary. It flits about like a vagrant will-o-wisp and is so fickle that it seldom means the same thing. One system may include in its cost everything in the book, and most include tire costs and wrecks. We leave those out, believing that they have little to do with the actual cost of transportation.

Our system of arriving at the transportation cost per mile eliminates the ephemeral depreciation charge, includes the cost of the vehicle in the first place, and gives the operation credit for the money obtained when the vehicle is sold. Our records, charts, red and black graph lines have proven to us many times that, in some cases, it is cheaper to give the vehicle away for free than to keep it and operate it.

Orscheln Brothers Truck Lines started in business before the Model T became famous and our slogan "Highways Are Happy Ways" sounds a lot better when our tractors are clicking off the miles for 2½ cents each and the fortissimo is much more effective when it is running 20 hours daily instead of the conventional eight.

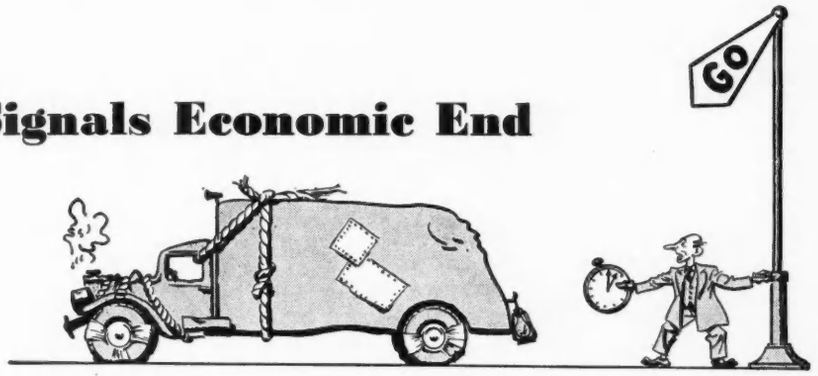
Economical Maintenance Limit

TO STATE a fact and not to raise an argument, there comes a time when economical maintenance eventually runs out. Repair costs go up to a point where it is more economical to start over by buying a new truck than it is to keep the old one at any price. This is not to say you can't run a truck two million miles if you want to—I have no doubt that our efficient shops could keep one going until Gabriel blows his horn—but it is rather to say that it is not hauling



on original) indicate type of data on which detailed figures are kept, as explained in article. Graph lines are taken from figures in corresponding columns and show, O, (drawn in red ink on original form) cost of vehicle plus operational expenses; P, operational cost alone; Q, maintenance cost. Fig. 1B, above, is reverse of Fig. 1A

. . Simple System Signals Economic End



Unique system supplies current as well as accumulated cost and mileage data, also graphs these data to provide visible signal to show when trucks should be traded

by ***AL ORSCHELN***

Maintenance Superintendent, Orscheln Brothers Truck Lines, Moberly, Mo.

freight at an economical rate if you do.

If you keep a unit too long you will be paying for a new truck but you will be driving a fugitive from the scrap pile.

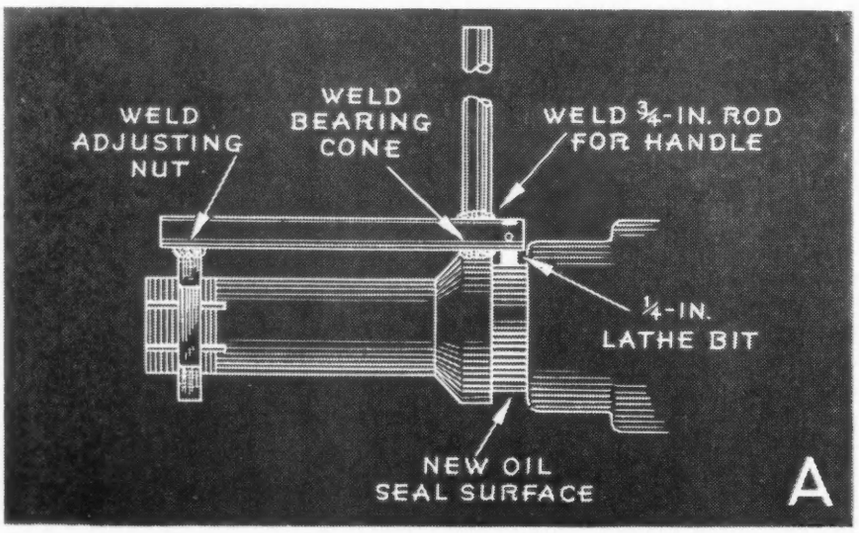
Our cost, maintenance and mileage records reveal many interesting things about truck depreciation. It teaches us, among other things, that some cost figures mean nothing by themselves but are only significant as they are related to some other figure. That is the reason our cost graph, Figs. 1A and 1B, is composed of three lines instead of one. If you like a long line with few jagged edges, that remind you of flashes of lightning, we've got that one, too; but, without

(TURN TO PAGE 130, PLEASE)

$5 FOR ALL HINTS PUBLISHED EACH MONTH

$25 FOR THE BEST HINT PUBLISHED EACH MONTH

Shop and Salvage



$25 HINT OF THE MONTH

Axle Resurfacing Tool

by Henry Williams, Shop Foreman
Inland Motor Freight, Spokane, Wash.

I am enclosing a drawing of a tool I have made to refinish the surface of the rear axle under the grease retainer. When a bearing goes out, often a grease seal surface is damaged so that the axle tube has to be removed and resurfaced or replaced. We use this tool to turn the original surface down enough to shrink a band on it and bring it back to proper size.

The tool is made from a bearing adjusting nut, a salvaged bearing cone, a ¼-in. lathe bit and ¾-in. steel rods. The nut acts as the feed, and the bearing cone serves as the steady rest. The horizontal bar bracing the two is made from 1-in. cold rolled round stock, drilled at the one end to take a ¼-in. lathe bit. An Allen screw holds the adjustment to proper depth.

The handle is welded to the horizontal bar and can be left as long as necessary to turn the surface down.

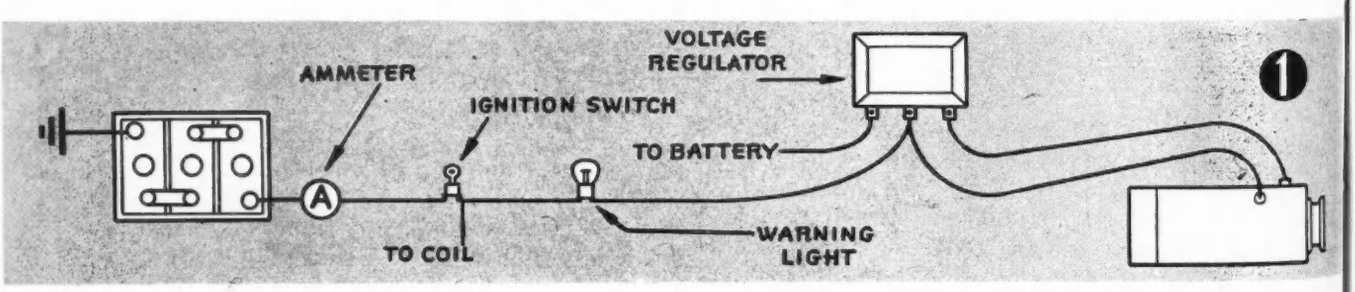
With this tool the seal surface is turned down to take a ⅛-in. wall band which is shrunk on to give a better surface than the original. We have never had one loosen up. This procedure saves time in pulling the axle housing and naturally a lot of money.

1. Generator Charging Signal

by Jean Babin, Fleet Supt.
Columbian Laundry, Newark, N. J.

Here is a tip that may save a generator or a battery.

A small red warning light installed under the dash can be installed so that the lamp will light when the generator is not charging and also



Hints

Now is the time for all good mechanics to make themselves some extra cash. All . . . yu gotta . . . do, is sit down and write up one of your shop's favorite short cuts to maintenance—or else some info on a durned good homemade shop tool. It might be a tip on salvaging some of that junk hangaround the back room—and it could be on an improved repair method that your shop has developed. You don't like to write? Well, draw a picture—shoot us a diagram with a few simple words. We'll attempt to figure it out. We will do the work, but we want your idea. For five fins, men, you can't go wrong. Give it a try, and you may hit the jack pot of $25, with five bucks the absolute minimum for an accepted service hint or a short cut to maintenance.

will light when the ignition key has been left on with the engine stopped.

This bulb should be a double contact, 1 candlepower. One wire is run to the ignition switch; the ignition coil side. The other contact of the lamp is run to the ground generator post of the voltage regulator.

This hook up will permit the circuit to ground when the engine is not running or when the generator is not charging. The driver will be more apt to notice when he has a bad generator, when the lamp lights.

2. Drill Fixture

by E. O. Wilson

H and J Truck Co., Los Angeles

For heavy drilling on truck frames and other places where the work cannot be taken to the drill press, a jig can be made so that two men can do the work with a regular breast drill.

Simply bolt a 1½ x ⅜ x 9-in. strap iron on the end of a truck body stake, cut a slot in the end of the strap iron as shown about ½ in. wide and 1½ in. back. Bolt one end of a ⅜-in. chain to the stake and secure a hook to the free end so that it will fasten to the material to be drilled. Place drill in position and fit stake over it as shown.

By putting the chain into the slot to adjust for length, you can adjust the stake to any height of drill used. With one man pushing on end of stake you can operate the drill in the usual manner.

We drill close to the end so that handle will rest on the chain. In this way if the drill sticks, it cannot twist the motor out of your hand. With heavy duty drill, 1⅛-in. holes can be drilled safely.

3. Axle Shaft Check

by Joseph Dellapent

New England Trans. Co., N. Y. City

A simple check may be kept on an axle shaft for twist, if, upon initial installation of a new axle, indelible alignment points are made on the axle ends in alignment with the center line of the shaft. Whenever this shaft is pulled, a quick glance at the alignment points will show whether the shaft has taken any twist.

This is much easier than hauling in a truck with a broken axle shaft.

4. Improved Lug Wrench

by A. A. Suggs, Shop Foreman

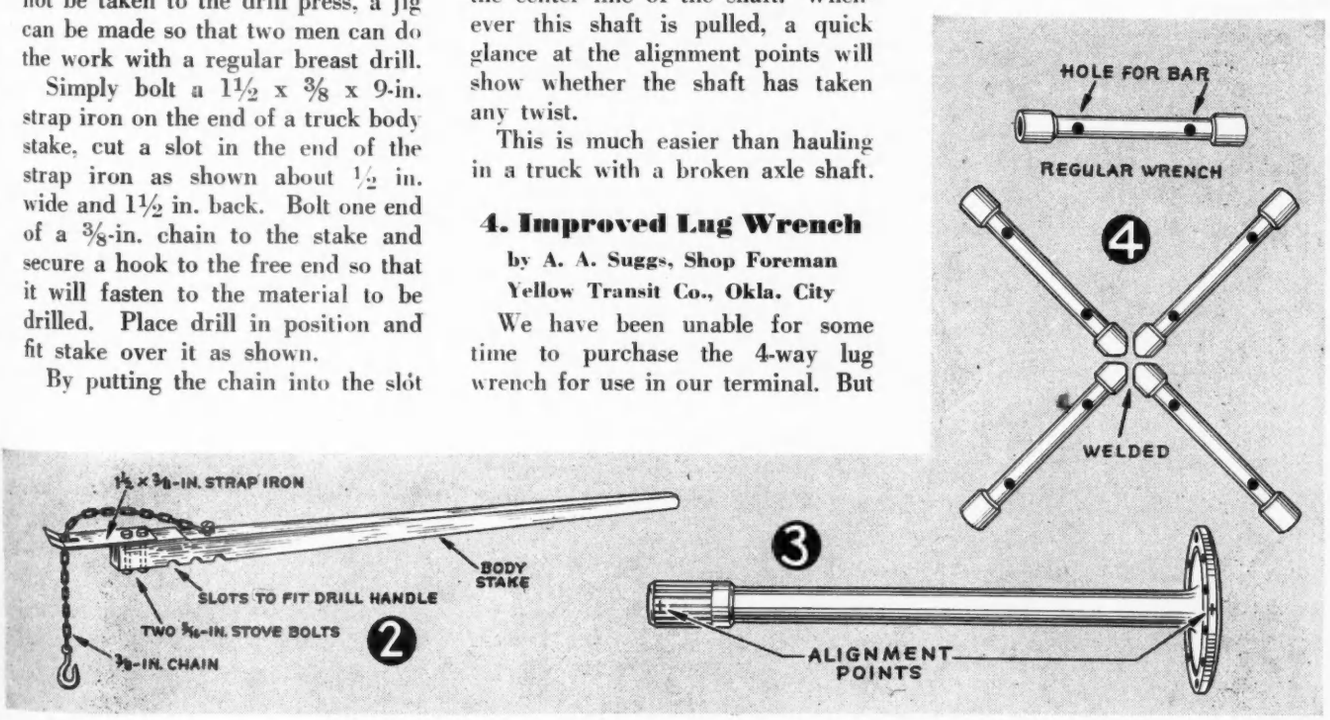
Yellow Transit Co., Okla. City

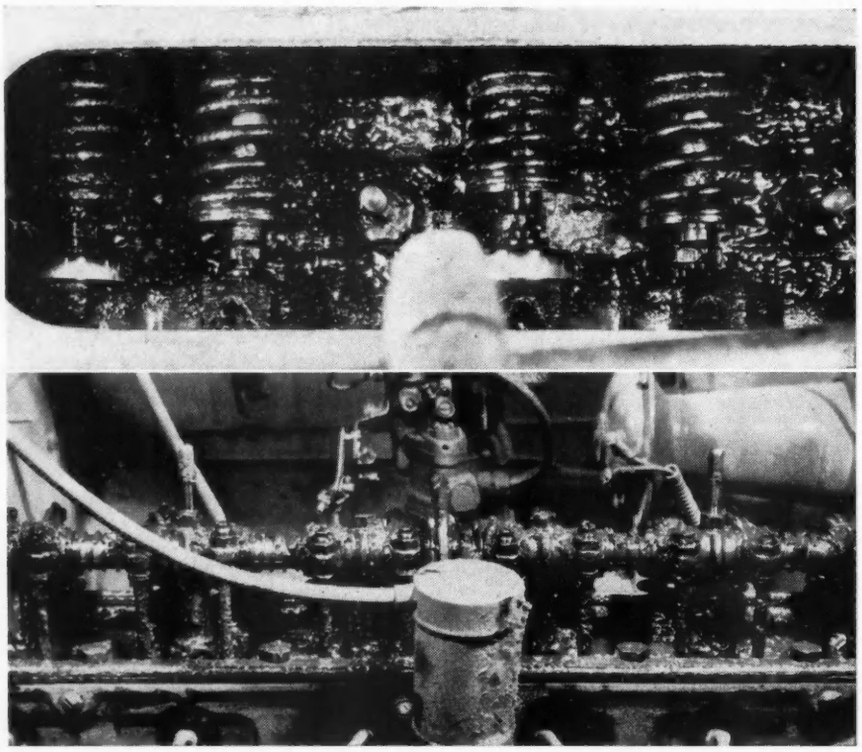
We have been unable for some time to purchase the 4-way lug wrench for use in our terminal. But we have solved the problem and expect to save quite a sum of money in the future.

We have on hand a number of lug wrenches that come with our trucks. We weld four of these together as illustrated and have a wrench that is better than the original. You can use either two or three sizes, depending on your requirements.

We figure that the conventional wrench has four sizes, only one of which we use, so this new one has a life four times that of the ordinary one.

Welding simply requires a beveling of the ends and building it up with metal.





Don't expect H-D oil to clean up engines sludged as badly as these

GO HEAVY

On Maintenance Not Heavy-Duty Oils

*by P. V. KEYSER, Jr., G. A. ROUND & J. P. STEWART**

Socony-Vacuum Laboratories

Lubrication Experts Say:

Go Light on use of HD oils in certain cases

Go Light on blaming them for certain failures

Go Light on thinking them magic eurealls

Go Heavy on maintenance to cure engine ills

*Excerpted from a paper presented at an SAE Metropolitan Section meeting.

THE USE of Heavy Duty oils in the gasoline engine is not as definitely a "must" as is their use in the diesel engine. Under moderately severe operating conditions the Premium type oil gives satisfactory performance but as the service becomes more severe, conditions within the engine are created which give the Heavy Duty oil an advantage. Soot from the fuel and contaminants generated by the oil are present in the crankcase and if through dispersive action they can be contained by the oil and not permitted to settle out, engine parts will be just that much cleaner; screens frequently remain actually bright over relatively long periods of service and piston and oil control ring deposits are minimized. All these are conducive to maintenance of high engine efficiency over long periods of operation and the service record of Heavy Duty oils in this respect is good.

However, in too many instances, operators have been oversold on Heavy Duty oils and have inordinately lengthened out oil drain periods after placing fleets on that type of oil. Somewhat longer drain periods may be tolerated while the piston rings are in good condition, but after wear and loss of ring tension permits a marked increase in blowby, such drain practice can only lead to disappointment in the apparent performance of the oil.

A condition does exist in the gasoline engine that we must admit the Heavy Duty oil cannot fully cope with; this is the digesting and rendering innocuous certain of the products of incomplete combustion of the gasoline. Such products are highly unstable, being partially oxidized when they reach the crankcases, are highly acidic and at least some are probably aldehidic in nature. Similar materials are basic components of many synthetic varnishes, paints and resins. The Heavy Duty oil may hold these materials in suspension but it can only retard, not prevent their further oxidation or polymerization to very sticky resins which, even though dispersed, can attach themselves to engine parts such as pistons, cylinder walls, etc. Certain soft sludges, particularly those formed during low temperature

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Tri-State Trip

Finds Fleetmen on the Move

New vehicles, new buildings, new equipment dominate sound readjustment

Time and again fleetmen have said: "Sure wish I had time to get out and visit other fleets just to see what goes on; but I just never get the time." To accomplish just that on behalf of its readers, COMMERCIAL CAR JOURNAL some time ago decided to send members of its headquarters staff out on informal, flexibly organized tours. Associate Editor Bart Rawson has made several such trips. A year ago he spent five weeks in the South, later on, a few weeks in New England. As of this writing he has just returned from a spring trip across New York state, through parts of Ohio and Western Pennsylvania with a dash into southern Ontario.

Fleetmen everywhere were engrossed in many of the same old problems—the continuing battle for new equipment and the axiomatic struggle to keep old equipment going, the problems of inside vs. outside storage and of how to determine the most economical replacement point—but a few things new had been added. No less than seven of the fleets visited were building new shops. One was experimenting with a three-engine tractor-trailer combination. Nearly all the utilities had interesting new body models. A large common carrier had taken over an island with its wartime boat building plant. And so it goes. For a very informal tour, join us through the medium of the printed page—The Editors.

IN RECOUNTING THE HIGHLIGHTS of this very informal trip we have preferred to emphasize the unusual rather than to establish an overall sounding board of current thinking. There were, however, a few definite general trends which may be briefly summarized before we delve into specific cases.

It goes without saying, for instance, that all of the fleets visited had placed heavy commitments for new rolling stock, and that only a fraction of the vehicles "on order" had been delivered. Nearly all were planning also on extensive improvements for their shop layouts with emphasis on heavy equipment by means of which more work could be turned out with less labor and consequently with less cost.

No less than seven, or approximately 16 per cent, of the more than 40 fleets visited were in the process of building, or had their plans drawn, for brand new shops. Some of them would be elaborate, one with a conveyor chain washing installation, all would be practical, sound structures designed to meet the specific everyday requirements of their particular organization.

We tried unsuccessfully to establish a trend either toward or away from increasing the amount of maintenance performed in the fleets' own shops. Generally, there could be no doubt that the majority were planning more extensive maintenance than in pre-war years. But when an attempt was made to establish a pattern, for instance, concerning the amount of unit rebuilding undertaken by the shop, we found conflicting ideas. On the one hand were those who were rebuilding practically everything, including electrical equipment, carburetors, fuel pumps and the like, with firm conviction that their venture was economically sound. But those on the other side of the fence, relying on outside sources for the exchange or rebuilding of these units, were equally sure that their's was the correct economic thinking.

The parts situation generally has improved since that observed a year ago, but at greatly increased prices. One very large operator noted that his parts cost had risen since 1944 by approximately 50 per cent, his labor costs by approximately 40 per cent, and his new vehicle cost by almost 100 per cent. (in the light standard panel delivery models). All these things posed important factors in his long-range thinking on economic replacement schedules, and he was convinced that all things added, it would be necessary to keep vehicles

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LAUGH IT OFF

Three elderly fleet operators were sitting on the clubhouse porch chinning. For the lack of a better subject, they were discussing the ideal way of dying. The first, aged 75, said he'd like to crash in a tractor with loaded trailer going 90 miles per hour. The second, who was 85, said he'd take his finish in one of the new jet planes by power diving her into the ground at 700 miles per hour.

"I've got a better idea," said the third, aged 95: "I'd like to die from gunshot wounds inflicted by a jealous husband."

C C J

Lady on telephone: "Yes, dear, that's all right, Don't hurry; enjoy yourself. Goodbye.

And as she turned from the phone her gentleman visitor asked, "Who was that?"

"My husband."

"What did he want?"

"Oh, he just called to tell me that he'd be late getting home tonight. He's downtown playing poker with you and a bunch of the boys."

C C J

EENIE, MEENIE, MINIE, MOE,
PIPE MY DOLL OUT WITH A JOE;
JOE IS BIGGER, SO I FIGGER,
SHE JUST AIN'T MY DOLL NO MO'.

C C J

Mechanic: "I want my dog's tail cut off right smack up to his hips!"

Veterinary: "Why, that would leave him with no tail at all."

Mechanic: "I know, but you heard what I said. My mother-in-law is coming for a visit and I don't want a particle of hospitality shown."

C C J

An American soldier went into a London restaurant. A good looking gal ambled over to his table, flopped down a menu and stood at attention.

"What's good today?" he asked.

She answered: "Rhubarb, rutabagas, ravioli, rice and roast."

"Baby, you sure do roll your r's."

"Yeah. Maybe it's because of these 'igh 'eels Hi'm wearin'."

C C J

Mama: "What did mama's little baby learn at school today?"

Sonny: "I learned two punks not to call me 'mama's little baby.'"

C C J

ONE CASKET TO ANOTHER: "IS THAT YOU COFFIN?"

C C J

For a month or so, Sadie had been coming to work about five minutes late every morning. Repeated warnings by her boss, the Safety Director, had no effect. Finally, in exasperation, he announced: "Miss Throckmorton, I am tired of talking about your tardiness. I am, therefore, suspending you for one day without pay. When would you like to take the day?"

"Well, if it's all right with you," snapped Sadie, "I'd like to use it up being late."

C C J

He: "My boss said I was a young man who would go far."

She: "You're going just so far—no matter what your boss said!"

C C J

"I understand you have a divorce, Mandy. Did you get any alimony?"

"No'm, I didn't. But my husband gave me some first-class references."

C C J

Shop Foreman to friend: "Boy, am I worried? A month ago my wife had triplets. Today I came home and she tells me we have twins."

Friend: "It's impossible to have twins within a month after you had triplets."

Foreman: "No, it isn't—One of the triplets got lost."

C C J

Professor: "Miss Adams, you've read that sentence wrong. I'm disgusted with your progress. Won't you ever learn? The quotation is, 'All men are created equal,' not 'All men are made the same way!'"

C C J

One of the girls from the office staff of Fleety-Fleet was getting married. Catty Cora was asked to serve as the maid-of-honor. The morning after the wedding, the entire office force were discussing the affair:

"Wasn't it annoying the way that baby cried during the whole ceremony?" remarked Finicky Freda.

"Yes, it was simply dreadful," quipped Cora. "When I get married I'm going to have engraved right in the corner of the invitation: 'No babies expected.'"

C C J

"I'm all done with dames. They cheat and they lie.
They prey on us males to the day that we die,
They tease and torment us and drive us to sin
Say, LOOK at the blonde who just came in."

C C J

Sam, the mechanic, was invited to pay a visit to a nudist camp. There was one stipulation made by his host: Sam would have to undress to get in. Reluctantly, Sam went into an old barn, disrobed, took a deep breath as one about to step into ice water, and strode out into the open—au naturel.

Two young married couples called to him. He joined them, wishing he had pockets to put his hands in. During the introductions he said to one of the very attractive young women: "I suppose it is socially proper to compliment you ladies, but honestly, I scarcely know where to begin."

RESUME WORK

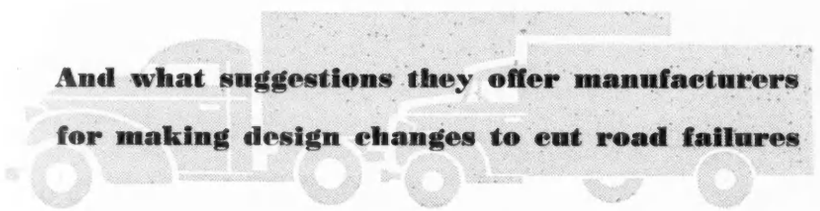
"This was a pretty risky run when I used to haul explosives"

FLEET OPERATORS' EXPERIENCE HANDBOOK

What Fleet Operators are Doing to Reduce ROAD FAILURES

Part 1

And what suggestions they offer manufacturers for making design changes to cut road failures



Analysis *by* **A. W. GREENE,** Managing Editor, Commercial Car Journal

Here are a few of the Many Questions this Survey Answers

Principal Causes of Road Failures Experienced by Truck Fleets

In Order of Vocational and National Frequency

Table 1

VOCATIONAL GROUP	Failure 1	Failure 2	Failure 3	Failure 4	No. of Fleets Reporting	Powered Units	Total Average Annual Mileage
COMMON CARRIER GROUP Local and Over-the-Road	Electrical	Fuel system	Tire	Clutch	48	5,184	117,257,360
FOOD DISTRIBUTING GROUP Bakeries, Dairies, Meats, and Other Food Products	Electrical	Fuel system	Tire	Rear axle	60	13,281	120,489,117
GOVERNMENT GROUP State and County, Municipal, Federal	Electrical	Fuel system	Tire	Clutch	58	14,042	89,447,499
CONSTRUCTION GROUP Builders, Quarries, Gravel	Electrical	Tire	Rear axle	Fuel system	9	1,174	8,530,000
PETROLEUM GROUP Private Carriers	Electrical	Fuel system	Rear axle	Tire	8	2,540	37,868,750
PUBLIC UTILITY GROUP Gas, Power, Water, Telephone	Electrical	Fuel system	Rear axle	Tire	27	7,167	55,997,892
RETAIL DELIVERY GROUP Other than Food, Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage	Electrical	Fuel ysstem	Tire	Rear axle	27	2,342	14,235,843
INDUSTRIAL, Private Carriers Local and Over-the-Road	Electrical	Fuel system	Clutch	Tire	3	275	3,900,000
TRUCK RENTAL	Electrical	Fuel system	Tire	Rear axle	6	2,569	9,804,000
TRUCK AND BUS FLEETS, Mixed	Electrical	Fuel system	Clutch	Rear axle	8	2,438	62,904,000
NATIONAL FREQUENCY, All Vocations, All Fleets	Electrical	Fuel system	Tire	Rear Axle	254	49,316*	520,434,461

* Includes 1339 Buses and 379 Special Powered Units (Off-road, Snow Plows, etc.)

Table 1. Principal causes of truck road failures experienced by fleets in 10 vocational groups. The four main causes, in order of frequency (explained in text), are shown in bottom line of the table. Also shown are the number of powered vehicles operated by the 254 reporting fleets and their total average annual truck mileage

. . . ROAD FAILURES

(Continued from Page 49)

No. 1 Vocational Causes of Road Failures

Table 2 — **A summary of causes reported by individual fleets as being their own foremost causes of road failures**

BAKERIES, Retail & Wholesale—Electrical, Fuel System, Rear Axle, Tire, Transmission, Valve, Water Pump

BEVERAGE DISTRIBUTORS—Electrical, Fuel System, Rear Axle, Tire

COAL, COKE & ICE—Electrical, Fuel System, Rear Axle

COMMON CARRIERS, Over-the-Road—Clutch, Conrod Bearing (diesel), Electrical, Fuel System, Lack of Driver Inspection, Tire

COMMON CARRIERS, Local—Electrical, Fuel System, Rear Axle, Tire

COMMON CARRIERS, Over-the-Road & Local—Electrical, Fuel System, Tire

CONSTRUCTION, Builders, Quarriers & Gravel—Differential, Electrical, Propeller Shaft, Rear Axle, Tire

DAIRIES, Retail & Ice Cream—Clutch, Electrical, Fan Belt, Fuel System, Tire

DEPARTMENT STORES—Electrical

FOOD DISTRIBUTORS, Over-the-Road — Bearing, Broken Piston, Broken Valve, Cooling System, Electrical, Fuel System, Tire

FOOD DISTRIBUTORS, Local—Electrical, Fuel System

FOOD DISTRIBUTORS, Over-the-Road & Local—Electrical, Fuel System, Tire

GOVERNMENT, County & State — Brake, Clutch, Electrical, Fuel System, Rear Axle, Tire and Tube, Tire and Wheel

GOVERNMENT, Federal—Cooling System, Electrical, Fuel System, Tire

GOVERNMENT, Municipal—Brake, Clutch, Electrical, Fuel System, Tire

LAUNDRY & DRY CLEANING — Electrical, Tire, Transmission

NEWSPAPER DELIVERY—Electrical, Fuel System

PETROLEUM DISTRIBUTION—Collision, Electrical, Head Gasket Leak, Tire

PETROLEUM PRODUCTION—Electrical, Rear Axle, Steering

INDUSTRIAL, Private Carriers (Other than Food Distributors), Over-the-Road—Clutch

INDUSTRIAL, Private Carriers (Other than Food Distributors), Local—Electrical

INDUSTRIAL, Private Carriers (Other than Food Distributors), Over-the-Road & Local—Electrical

PUBLIC UTILITIES, Gas, Water & Power—Clutch, Electrical, Fuel System, Rear Axle Tire

PUBLIC UTILITIES, Telephone—Electrical, Fuel System, Rear Axle, Tire

TRUCK RENTAL AGENCIES—Electrical, Fuel System, Spring

TRUCK & BUS FLEETS, Mixed—Clutch, Electrical, Fuel System, Rear Axle

Table 2. While electrical failures predominate as the principal cause of road failures experienced by truck fleets, about two dozen other causes were reported by a number of fleets as being their own foremost causes of road failures. These are shown in the above table, which is a summary, by vocations, of every failure reported by any fleet as being its principal cause

THE NEXT TIME that the shop telephone rings and the voice at the other end identifies itself as one of your drivers reporting that he can't get the truck started, the odds are that it's some kind of electrical trouble. If not, a good second bet is that the fuel system is out of order.

Don't shoot the electrical expert or fire the mechanic who handles fuel system maintenance, because their troubles are no different from the same men who do the same kind of work in most fleet maintenance shops in the country. This is a fact that has been uncovered by COMMERCIAL CAR JOURNAL's Board of Experts in their latest survey of the causes of road failures in truck fleet operations.

The Principal Causes

THE principal causes of road failures are summarized briefly in Table I. Failures of the electrical system — ranging from a jammed starter to shorts in the wiring—give the fleet maintenance supervisor his greatest headaches.

With the exception of the construction field, fleet maintenance men in all other vocations report that fuel system failures are second on the list of the most frequent road trouble calls. Fleet operators engaged in construction work report that their No. 2 road failure is caused by tire troubles. Considering the nature of construction work, which embraces on and off-the-road transportation, it is understandable that tire failures should place that high on the list.

Tire troubles take third place in the national road failure cause round-up. Two other types of failures, rear

Design Changes

Table 3 — **Heavy-duty replacements and**

ELECTRICAL

Replace factory parts with units of larger capacity
Oversize when replacing
Carry spare parts in garages along highway
Mount extra coil and condenser on unit
Replace original generators with 40-amp. generators
Group four batteries
Use heavy-duty regulator
Install heavier batteries
Use larger generators
Install heavy-duty generators
Install some batteries on running boards
Install rubber sleeves on terminal and solder ends
Carry spare fuses
Eliminate 12-volt systems
Rebuild battery boxes and carriers
Moisture-proof the ignition system
Use larger capacity coils
Use larger condensers
Specify 12-volt system on new equipment; replace 6-volt with 12-volt systems where possible
Better battery terminal connections
Install rubber boots on distributor cap
Install all electric wires in loom and solder all connections
Set-up voltage regulators
Install low-cut-in generators
Made and installed center bearing between starter drive and armature winding
Use separate magneto switch
Use smaller pulleys for low idle
Relocate ignition system to get away from heat, water and vibration
Install junction blocks and heavier wiring
Install alternators
Install separate lighting and ignition systems

axle and clutch, collected enough points, by certain vocations, to make a showing.

Rear axle failures place fourth, in order of vocational and national frequency. However, a glance up at that column shows that, with the exception of electrical failures, fleets report some of all the troubles so far enumerated—fuel system, tire, clutch, as well as rear axle failures.

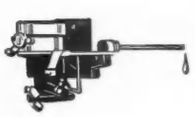
While only five different types of failures are listed in Table I, it should be pointed out that these are but the most frequent causes of failures reported by fleets. A word of explanation is in order. To begin with, the members of the Board of Experts were asked to list only four causes of road failures in order of frequency. This resulted in a variety of answers. Consequently, in order to arrive at vocational and national frequencies, it was necessary to use the point system of rating reported failures. Four points were accorded a failure if it was listed as the No. 1 cause by an individual fleet; three points were given the No. 2 cause; two points the No. 3 cause, and one point the No. 4 cause.

When the points were added, the vocational and national frequencies

Made and Other Steps Taken by Fleet Maintenance Men to Overcome Most Frequent Road Failures

auxiliary unit installations are principal design changes now being made; some trucks carry spare parts

Install separate battery chargers for trucks equipped with two-way radio, and recharge batteries every night
Set engines for faster idling
Will standardize on high top, glass mat batteries
Replace 10-ton gears with 11-tooth gears
Drill larger holes in distributor and distributor cap to prevent condensation
Ream spark plug holes and install larger plugs
Install heater hose over cables
Change distributor settings



FUEL SYSTEMS

Closer and more exact inspection
Mount vacuum gage and tank on truck
Electric pumps mounted in tank
Replace injector lines with ones of better quality
Carry spare parts in garages along highway
Use flexible lines to replace broken fuel lines
Install larger fuel lines
Install heat baffle plates
Use electric fuel pumps
Install electric pumps for emergency use
Mount electric fuel pump near tank
Trucks carry spare pump
Pack fuel pumps with grease
Install strainers at carburetors
Install special filtering screens in fuel lines and tanks
Experimenting with fuel pump shielding
Harden push rod
Install extra fuel filters
Insulate fuel lines
Use booster pumps
Solder screens in shut-offs
Install risers in tanks

TIRES

Frequent inspection
Stock spares in garages along highway
Use oversize tires
Use puncture-proof tubes
Change to larger tires and rims
Wide base rims
Cut old wheels and weld on flat, wide base rims
Standardize tires and wheels
Use butyl tubes
Mount spares in more accessible location on side of truck
Use flaps in 7.00x16; 6-ply on drop center rims

AXLES

Install special bearings with spacer on pinion shaft to prevent differential failures
Install heavier rear axles
Replace with larger rear ends
Trying patented rings for stud control
More frequent inspections
In some cases we have installed dual transmissions and differentials in tandem
Specify heavier axles on new equipment
Use heavy-duty differentials
Install heavier springs to keep load from throwing axles and transmissions out of line
Reinforce axle housing to prevent sagging
Install special seals to keep differential lube in place

CLUTCHES

Use larger clutches
Use better quality clutch plates
Install special sealed bearings in transmission to prevent grease from getting into clutch
Buy best replacement facings
Trying steel clutch
Use heavy-duty clutches
More frequent inspections
Replace originals with bronze clutches
Use fused fabric facings with heavy-duty pressure plates
Replace and specify largest type clutches possible
Use bi-metallic facings for heavy-duty service
Replace cushion-type plates with rigid types and use heavy pressure plate

★ ★ ★ ★

. . . ROAD FAILURES

(Continued from Page 51)

came out as shown in Table I (P. 49).

As will be seen in the table, electrical failures outscored all other reported causes of road failures and are, therefore, vocationally and nationally the No. 1 cause of road failures among truck fleets. However, as a matter of interest and curiosity, fleetmen may wish to know the various types of failures that were reported by individual fleets as being their own No. 1 causes of road failures. This variety of causes is summarized vocationally and alphabetically in Table II (P. 50).

254 Fleets Participate

A GOOD cross section of the nation's truck fleets is represented in this survey. Participating were 254 fleets, representing all principal vocations. They operate a total of 49,316 powered vehicles, which are divided into the following units: 32,198 trucks; 3858 truck-tractors; 11,542 passenger cars; 1339 buses; and 379 other special automotive vehicles such as snow plows, road graders, bulldozers and similar units. The 254 fleets also operate 6638 trailers.

The total average annual truck mileage operated by these fleets is 520,434,461 miles.

The territory covered by these fleets embraces all kinds of road conditions, from city traffic to mountain roads. The operations cover all phases of truck operation, from off-road work to long hauls. Despite this diversity of conditions, there is a remarkable similarity of troubles most frequently experienced.

Analysis of Failures

IN listing causes of road failures, the reporting fleets usually named specific parts, such as battery, condenser, coil, generator, fuel line, fuel pump and so on. However, a great many fleetmen simply stated "electrical" or "fuel system" failures or made similar generalizations. To include in the analysis all the fleets that generalized as well as those that particularized, all causes of road failures listed were grouped into the general classifications shown in Table I. This grouping also took care of the numerous cases ascribing road failure to two or more related parts. A large number of battery failures, for example, were blamed on generator or regulator failure.

Here is a breakdown of the most frequent causes of road failures:

ELECTRICAL—Numerically, battery failures lead the list of specific electrical parts failures, with generators and voltage regulators high on the list, either because of their own failure or as contributing to battery failure. Very few fleets pointed to battery quality or battery material faults. Most fleets burdened with battery failures stated that present capacities were inadequate. Stop-start operations, trucks equipped with two-way radios, and others having many lights and electrical accessories were most affected.

Ignition system failures came a close second numerically, with points, coils and condensers as the principal causes. Quality of point material was widely criticized. Quite a few fleets reported shorts due to moisture, and shorts caused by frayed wire covering. Ignition switches also were mentioned as causes contributing to ignition failures. A few fleets found fault with spark plugs.

Starter trouble came third in electrical system failures. The principal specific comment dealt with the spring return mechanism.

The lighting system also was responsible for a good deal of road failure troubles, with broken or frayed wiring, and loose or defective connections, as principal causes.

FUEL SYSTEM—The mechanical fuel pump heads the list of fuel system failures, with its diaphragm and spring as the particular weak spots. Carburetor jets and throttle linkage caused a number of troubles, with vapor lock as the chief complaint during summer. Clogged fuel lines and broken lines were high on the list, with frozen lines as the leading complaint in the winter months. Many of these troubles were attributed to poor, or lack of, filtration of the fuel, which was widely mentioned as the principal contributing cause of fuel

To Help Reduce

Table 4

Hundreds of suggestions add up

ELECTRICAL

- Larger capacity generators
- Improve generator brushes
- Improve voltage regulator
- Better wiring insulation
- Install 40-amp. generator
- Group four batteries
- Make battery box heavier and large enough to accommodate bigger batteries
- Larger batteries with greater water capacity
- Better coils
- Better condensers
- Better points and stronger fibre
- Heavier starters with heavier flywheel gears
- Locate batteries in accessible place
- Better terminals
- Heavier covering on wires
- Grease-proof and oil-proof cables
- 55 amp. generators
- Greater accessibility for inspection
- Heavier bearings where pump and fan operate over generator
- Dual ignition
- More tungsten in breaker points
- Better ignition switches
- Better distributors
- Moisture-proof ignition system
- More circuits
- 12-volt system
- Gear-driven starters
- Effective warning signal when generator is not working
- Warning signal when battery is low
- Insulate distributor and cap to prevent fine snow from shorting
- Have ammeter designed and located so that it can be read easily
- Use 14 mm. spark plugs instead of 10 mm. plugs
- Rewire truck so that signal and dome lights will not work when ignition switch is off
- Use generators that charge at low speeds
- Relocate wiring away from exhaust pipes, etc.
- Have distributors constructed to take replacement bushings in housings to permit repair of worn housings

Most Road Failures Fleet Operators Offer

These Suggestions to Manufacturers . . .

to requests for larger capacity, better quality and heavier construction of original units and parts

Use three bearings of larger size, or bushings, in starting motors
Improve method of insulating and anchoring electric conductors to body and frame to reduce chafing
Longer battery guarantee
Better generator cut-outs
High capacity, variable speed generators
Gear-driven generators
Larger or better generator belts with larger pulleys
Heavy-duty air-cooled generator
Airplane type ignition
Fuse all circuits
Shorter battery cables
Tougher wiring harness
Heavier wire in ducts
Supply better maintenance data
Drill larger holes in distributor and distributor cap to prevent condensation
Overload switch in ignition circuit to shut off juice when engine stalls
Heavier lock washers and longer screws on ignition switch
Build starter with a mechanical return of starter pinion instead of centrifugal
Install a.c. alternator

FUEL SYSTEMS

Flexible lines to eliminate broken fuel lines
Increase spring tension to maintain lift or adopt pusher type to take care of large tanks with low mounts
Use heavier diaphragm
Better fuel pumps
Larger fuel pumps
Improve design
Use better materials
Better installation
Improve design of diesel fuel lines
Better material for diesel fuel lines
Electric pusher pumps
Mount a vacuum or pressure gage on dash for warning
Locate fuel pumps away from heat
Sturdier parts
Gas tank too small
Heavy-duty pumps
Fuel lines must withstand vibration
Pressure-feed fuel system on trucks using air brake system
More positive fuel system
Better carburetors
Better throttle linkage
Electric fuel pump near tank
Use better filter to separate water from gasoline
Gasoline tanks should be designed for easy draining of accumulated water
Heavier fuel pump spring
Better pump linkage and pressure adjustments
Locate fuel pumps and lines in more accessible place
Prevent vapor lock
Better gas tanks
Aircraft type fuel system, electric or submerged gravity feed pump
Install 3-gal. low alarm gong
Standardize fuel pumps on all trucks
Bigger and better sediment bowls
Electric fuel pumps with built-in governors
Equip with auxiliary fuel system
Provide connections on vacuum and compression sides of pumps for testing
Better exchange service
Extend primer shaft so diaphragm may be tested before dismounting or running down battery
Need more complete factory maintenance information
Use non-corroding springs in fuel pumps
Better tank fittings

TIRES

Better built tires
Nylon or metal mesh inlaid tires
Sturdier sidewalls
Puncture-proof tubes
Equip with larger tires
Signal device to let driver know when one of dual tires is flat
More natural rubber in tires
Better recap material
Heavier plies
Have correct air pressure stamped on each tire

AXLES

Redesign differential to use roller bearings
Heavier rear axles
Use special alloys for greater strength
Larger axles
Lock nuts from flange to hub
Heavier spline on axle shaft
More rugged differentials
Full-floating rears for ½-¾-ton trucks
More studs per wheel
Larger flange area
More teeth in differential gears
Spider gear improvement needed
Heavier, self-aligning differential bearings
Lower ratio
Stronger shafts
Mount spring under axle for all vehicles to be used in mud road service
Provide better seals to keep differential lube in place

CLUTCHES

Larger clutches
Heavier clutches
Heavier springs
Standardize clutches
Use metallic clutches
Improve clutch fingers
Better grade clutch facings
Eliminate friction type clutch
Use torque converter or hydraulic type clutches for trucks of less than 2 tons
Greater facing area
Larger throw-out bearings
Use fluid drives

system failures. Troubles with diesel injectors and fuel lines were listed in a number of cases.

TIRE—The principal tire troubles were reported as "flats." Fleet maintenance men who reported other troubles ascribed most of them to wartime quality of the rubber and to faulty recaps. However, a number of fleets found fault with wheel sizes and rims, attributing some tire failures to these items. A few fleets absolved tire manufacturers for their troubles, blaming road conditions, overloading, driver carelessness and careless inspections.

AXLE—There was only one mention of front axle failure. The principal axle failures had to do with rear axle shafts and differentials, which were about evenly divided. While a number of axle shaft failures were said to be breaks, due to poor quality material, the leading contributing cause was listed as loose or broken studs or bolts. Differential troubles were reported as being caused prin-

. . ROAD FAILURES

(Continued from Page 53)

cipally by bearing failure, although the gears were mentioned a number of times. Some fleetmen absolved rear axle manufacturers from any blame for their axle failures, attributing the cause entirely to overloading.

CLUTCH — Pressure plates and

Table 5

What Else Fleets Are Doing

A Vocational Summary

Daily checks by drivers and mechanics, intensified PM pro-

BAKERY

Mechanical inspection every 2000 miles
Replace fuel pumps every 25,000 miles
Repack wheel bearings every 25,000 miles
Change carburetor every 50,000 miles
Daily truck report filled out by driver
Keep spare trucks on hand to substitute for any vehicle that shows an indication of probable road trouble
Spot checks every week
Lubricate every 1000 miles
Installing heavy-duty replacement parts
Greaseman inspects vehicle when on greaserack
Driver education
Management program to improve driver habits
5000-mile PM inspections
1000-5000-10,000-mile PM inspections
Equipping fleet with puncture-proof tubes (flat tires practically eliminated)
Daily safety checks
Safety award dinners
No-service-call contests
Cash bonuses for supervisors
Weekly meetings with mechanics stressing the things that cause road failures
Monthly inspections of parts and units giving road trouble
Monthly tune-ups
Driver complaint forms
Periodic inspections, monthly and bi-monthly
Daily inspections
Trip reports

BEVERAGE

Driver reports
PM program
We plan to trade-in our trucks every two years
Check closer
5000-mile preventive service
Daily driver complaint form
Inspections once a month
Tune-up once a month
Mechanics park trucks at end of day, which helps determine vehicle's condition and locate troubles that drivers fail to report
Nightly check-ups
Spot checks
Frequent inspections
Making a drive on troublesome units

COAL, COKE & ICE

Added first-class mechanic as inspector
We have a scattered fleet; check as opportunity affords
PM program
30-day inspections
Driver complaint forms

COMMON CARRIER

COMMON CARRIER—OVER-THE-ROAD AND LOCAL

Driver complaints
Driver checks
5000-mile PM inspections
Units that travel 1500 to 2500 miles per week get checked thoroughly each week; rest get 2000-mile checks
2500-mile PM program
1000-mile inspections
Trip inspections
Driver complaint forms
Giving driver's complaints immediate attention
Daily checks
Greaserack attendant makes additional checks
Periodic checks by mechanics
Daily tire inflation checks

COMMON CARRIER—LOCAL

Driver complaints
Periodic inspections
Monthly and semi-monthly inspections
Driver's forms and inspections reports
Voltage drop readings
Send only newest trucks on long country trips
More frequent PM checks
Daily safety checks
Driver spot checks
Change in personnel

COMMON CARRIER—OVER-THE-ROAD

Daily trip reports
Daily inspections
Mileage and work records
Driver spot checks
PM checks
Lubrication every 1000 miles
Drivers instructed in PM checks; are furnished with a card list of items; make reports at end of trip
1000-10,000-50,000-mile PM checks
2000-mile PM checks
More accurate check-ups
Safety checks: 100 to 1000 miles. Complete service every 1500 to 2500 miles
1000-mile inspections, complete inspections every 15,000 miles. Trailer wheels packed and inspected every three months
Monthly tabulation and annual summary of specific types of all mechanical road delays of five minutes or more
Better inspection and maintenance
Checks before departure
End of trip inspections
Driver complaint forms
Driver safety checks daily
Periodic inspection

CONSTRUCTION

PM program
Weekly checks
Daily inspections
Driver reports
Complete tire inspection every two weeks
Daily safety check
Trip inspections for over-the-road vehicles, mileage checks for city trucks, six-month general safety inspection

DAIRY

30-day or 1000-mile PM inspections
Driver training program
Driver cooperation
Driver trip checks
One driver only for each vehicle
Road call forms for study of recurrent troubles and methods of elimination
More intensive tire and battery inspections
Bi-weekly inspections of troublesome parts
Monthly analyzer check-up
Safety checks
10,000-mile inspections
Driver daily complaint forms
Daily inspections
Drivers check own safety equipment

DEPARTMENT STORE

Daily safety checks
Driver complaint forms
Driver checks

FOOD DISTRIBUTION

FOOD DISTRIBUTORS—OVER-THE-ROAD AND LOCAL

PM program
Trip inspections
Safety checks
Driver complaint forms
Daily checks as trucks are being parked
1000-5000-10,000 and 20,000-mile PM checks

FOOD DISTRIBUTORS—LOCAL

Monthly checkups
Driver complaints
Daily checks
3000-mile inspections
1000-mile inspections

FOOD DISTRIBUTORS—OVER-THE-ROAD

Trip inspections
Driver complaint forms
2000-6000-18,000-mile PM checks and maintenance
Weekly vehicle inspection

GOVERNMENT

GOVERNMENT—MUNICIPAL

Periodic inspections
Driver checks
PM inspections every 3000-5000 miles
Check and service every two weeks
More frequent change of questionable parts

bearing failures are the principal sources of clutch trouble, according to fleet maintenance men. These parts account for about 50 per cent of the failures listed. The balance were not specific as to the exact nature of clutch failures.

In passing, it seems worthwhile to mention that power train failures came close to being among the five principal road failures. A great many were reported. Transmission, universal joint and driveshaft failures were the chief causes. Broken springs and fan belt failures came next.

to Reduce Road Failures

of Preventive Measures

grams, driver education are the leading preventive measures

Corrective Measures Employed

ANY compilation of causes of road failures would be of little value if no data were obtained on what measures were employed to overcome road failures. This information the Board of Experts supplied freely, a summary of which appears in Table III. While some of the corrective measures deal with adjustments, relocation of units or the use of extra equipment, the most outstanding factor is the replacement of original factory units with others of larger size or heavier design. This shows

(TURN TO NEXT PAGE, PLEASE)

Driver instruction
Experiments to overcome causes of failures
Daily checks
More frequent mechanical checks and adjustments
Grease man reports mechanical defects noticed
Driver complaint forms
Require drivers to have elementary knowledge of care of trucks

GOVERNMENT—COUNTY & STATE

Driver checks
Better understanding between drivers and shop men
1000-mile service
2000-mile lubrication
1000-mile checks of troublesome parts
200-500-hour inspections and lubrication
Complete check every time vehicle is in shop for any work
Weekly grease and oil change
Better tire checks
Change tires when first sign of weakness appears
3000-mile checks of troublesome parts
Trying to have drivers take pride in trucks they operate
Teaching drivers mechanical fundamentals of the vehicles they operate
Periodic inspections
Trip inspections
Installed governors
Driver complaint forms
Mobile grease trucks
Periodic field inspections
Daily safety checks by driver
Daily spot checks by mechanics, weekly checks (two men, 1½ hours)
Insist on road check by shop superintendent with driver before turning truck over to him

GOVERNMENT—FEDERAL

PM program
Trip inspections
1000-mile inspections
Furnish drivers with spare plugs, belts and emergency tool kit that is turned in at the end of every trip
Driver inspection every 30 days or 500 miles, whichever comes first, and mechanic inspection every 60 days or 1000 miles, whichever comes first
PM work at 2500 and 7500-mile intervals
Driver responsibility to see that vehicle is kept in approximately same condition as when issued
Daily driver inspections
Periodic mechanic inspections
Daily safety checks
Grease and inspect at 50-hour intervals
Driver education
Better purchase specifications
Driver complaint forms
Daily and weekly driver checks

INDUSTRIAL

INDUSTRIAL—OVER-THE-ROAD AND LOCAL

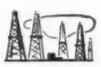
Closer followup on driver complaints
We use daily driver report-complaint forms. Units are divided into small groups and a mechanic is responsible for PM inspections
Have schedule for pulling generators, fuel pumps, water pumps, etc.

LAUNDRY & DRY CLEANING

Driver reports
Regular PM schedule
Driver cooperation
Use blackboard with number of every truck on it. Drivers are instructed to write complaints on blackboard and these are taken care of at once
Monthly checkups
Daily driver inspection
Mechanic starts all trucks every morning and makes quick inspection
Driver complaint forms

NEWSPAPER

Driver trouble reports
PM program
More frequent checks



PETROLEUM

PETROLEUM PRODUCTION

Driver complaint forms
PM program
Driver checks

PETROLEUM DISTRIBUTION

Periodic checks
Driver checks
Over-the-road trucks checked daily by drivers and weekly by our own mechanics or an approved outside garage. Local trucks are checked periodically by mechanics assigned to PM work. At the end of each month we receive complaint forms from the drivers. Current failures are reported by the driver to his supervisor who authorizes the work to be done
1000-5000 and 20,000 PM procedure
Weekly checks
Training drivers how to check truck and trailer

UTILITY

UTILITY—GAS, WATER & POWER

Regular inspection plus general annual inspection
Daily reports on mechanical trouble, supplemented by undercarriage inspections at nights by greasers
Inspections with 1000-mile lubrications jobs. Tires checked nightly. 2000-mile engine inspections. Complete inspections at 4000 miles, at which time all wheels are removed. Thorough inspections of all vacuum and hydraulic lines and hoses. Distributor removed every 4000 miles, at which time they are inspected, overhauled or replaced
Lubrication and inspection every four weeks
Periodic inspections
1500-5000-mile checkup order
Daily safety checks and service
Driver complaint forms
1000-5000-mile PM

UTILITY—TELEPHONE

Start and warm up engine after standing more than one night
Nightly inspection of tires
PM inspections monthly on large equipment
We have one man from 4 p. m. to midnight that does PM checking
1000-mile PM checks
Driver complaint forms
Weekly mechanical checks
Periodic inspections on PM schedule
Driver work request forms
More frequent clutch clearance in Winter
More frequent tire checks
Thorough inspection routine
Daily inspections
Weekly safety checks
Closer inspection of troublesome items

TRUCK RENTAL

Installed additional filter on our gas pumps, installed springs on choke control knobs, check all wiring regularly for shorts or potential shorts. Proper training of regular lubricators, which we have had since the end of the war. Better instruction to all service men and mechanics.
Pre-trip inspections
1000-mile and 7000-mile checks
Driver complaint forms, checked at time of complaint by shop foreman
PM program
Thorough checking and service every 30 days or 1000 miles, whichever comes first
Trip inspections

TRUCK & BUS

Driver reports
Driver complaint forms
Periodic inspections
PM routine at 1500 miles (A), 2000 miles (B), and 20,000 miles (C)
Driver checks
Trip inspections
Check batteries twice a week
Complete inspection system daily up to 40,000 miles
Daily inspection by shop foreman and weekly checks on tire inflation and battery condition
Monthly mechanical inspections

. . . ROAD FAILURES

(Continued from Page 55)

beyond any doubt that fleet operators want heavy-duty parts and units on their trucks. Direct, and often forceful, comments to this effect were made by fleet maintenance men when they listed the causes of failures.

Further evidence of the demand for heavier and larger capacity units is to be found in Table IV. This is a compilation of suggestions for overcoming road failures which fleet maintenance men were asked to make for the benefit of truck manufacturers.

It is interesting to note that only a few of the many suggestions contained in Table IV have to do with special designs. Most outstanding is the predominance of three words—larger, better and heavier—used to describe desired capacity, quality and construction improvement. This request for larger, better and heavier parts is not confined to any particular units. Suggestions for improving the electrical system, fuel system, clutch and axle, contain the same requests.

The one fact that should be understood about the Table IV listing is that, as much as possible, duplications have been omitted. Practical variations of certain basic suggestions are given, but where fleets have worked their improvement suggestions similarly, those duplications were omitted. Thus, the table cannot be used to determine numerical predominance of any type of suggestion. Instead, its purpose is to show variety and types of suggestions that fleet maintenance men made with the thought that, if adopted, the suggested changes will benefit fleet operators by eliminating or reducing the frequency of their causes of road failures. However, because numerical frequency can be used as an index to demand, some comments on the predominant suggestions follow.

In the group dealing with the electrical system, the greatest number of suggestions have to do with improving the quality of ignition system parts, with generator improvement suggestions predominating. A close runner-up is the suggestion that battery carriers be enlarged to permit installation of larger batteries where needed. Wiring improvement, mostly dealing with insulation and mounting, also ran up a high tally.

FLEET OPERATORS' EXPERIENCE HANDBOOK

Part 2

of this survey will be published in the July issue. It will describe how fleets are handling their road failure calls

★ ★ ★ ★

The greatest number of suggestions concerning the fuel system have to do with the fuel pump. The suggestions vary all the way from heavier diaphragm material to adoption of electric fuel pumps, either as standard or auxiliary equipment. A great number requested replacement of mechanical pumps with electric pumps. Suggestions for use of flexible fuel lines, or segments, to reduce fuel line breakage failures takes second place. Improved filtration of fuel and relocation of pump, away from high heat areas, run neck and neck for third place.

As far as tire suggestions go, neither their number nor variety was great. Predominant was the expression "better built tires." In several cases this suggestion was amplified by such additional remarks as, "with nylon cords" or "with sturdier sidewalls." There were quite a few suggestions about wider rims and puncture-proof tubes.

To help cut rear axle failures, the majority of fleet maintenance men suggested heavy-duty units. Requests for more rugged differentials and axle shafts scored the next high count. Third place goes to improvement of axle flange stud design, with requests for full-floating axle equipment on the smaller trucks trailing by only one vote less.

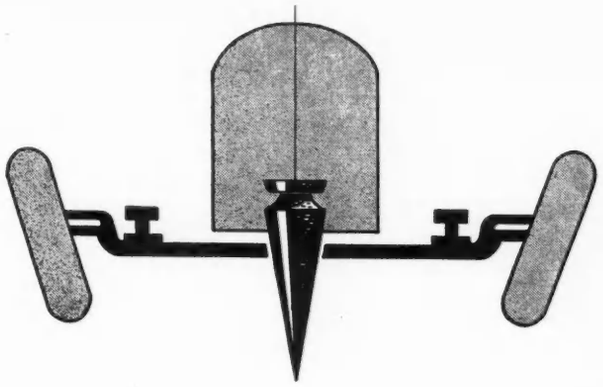
When it comes to clutches, most fleetmen specify use of heavy-duty types as their principal suggestion. The next high number concerns facings, asking for better quality and larger facing area, with suggestions to adopt metallic facings taking the lead. Quite a number of fleets suggested use of torque converters or hydraulic types for trucks in light-duty service.

Preventive Measures

INASMUCH as road failures are very costly, most fleet operators have undertaken preventive maintenance programs and other measures to reduce it, if not eliminate, emergency road repairs. A summary of these measures is given in Table V.

While preventive measures run from driver instruction to cash bonuses for supervisors, the most outstanding factor seems to be the emphasis on daily vehicle inspections by mechanics as well as drivers. The prewar type of catch-as-catch-can truck maintenance seems to be a thing of the past. Fleet operators are striving for better maintenance control and management.

Since most fleets have road troubles, the object of this survey was to put the spotlight on them with the aim of determining (1) how their number can be reduced to a minimum and (2) how that minimum can be handled efficiently and economically. This article has shed some light on the first part of the objective. The other will be covered in the July issue.



WHEEL and FRAME Alignment

Causes and cures of common complaints arising from misalignment, maladjustments and wear

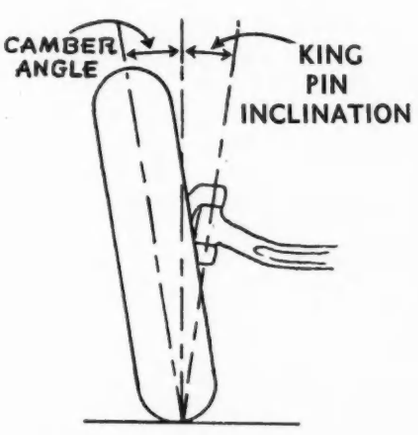
by M. K. SIMKINS
Technical Editor
Commercial Car Journal

IS YOUR TRUCK a tire gouger? Is it safe for high speeds, heavy loads and congested traffic conditions characteristic of our transportation system today? Many trucks join this category after a few thousand miles, due to negligence in wheel, axle and frame alignment procedures. A vehicle with wheels and frame out of alignment is a dollar-eater for the owner, a nightmare to the driver and a menace to the highway.

Wheel alignment service starts with inspection and trouble shooting the cause of unsatisfactory driving conditions. A systematic routine for checking wheel roll will speed the work and make precision adjustments a matter of course. Drivers' reports may be used with reservation in shooting alignment troubles. However, a road test by the mechanic himself will be invaluable in securing proper leads to wear and maladjustments.

Hard Steering Conditions

ONE of the major causes of hard steering is too much positive camber. Camber is the outward slope of the wheels at the top, obtained by slanting the spindles downward at the free end. This quality, along with an inclination of the king pin, brings the road contact of the wheel more nearly under a point where the load rests, establishing point suspension. This distributes wear and strain evenly along the king pin and the front wheel bearings, reducing road and internal friction and providing easy turning of the vehicle.



Camber helps to establish point suspension

Modern trucks, however, are built with very little camber, only enough to compensate for wear in king pins and bushings. The wheel is nearly vertical, but point steering is obtained by slanting the king pin out at the bottom, a factor in itself reducing stress on the king pins and bearings. It is apparent, then, that since camber and king pin inclination permit the tire to rest on the road at a point almost at the point of pivot, that both angles must be kept within manufacturers' specifications in order to maintain this quality. It is recommended that the mechanic use the lowest camber specifications for best results.

Excessive camber either on the positive side or the negative side will also cause hard steering. This condition also puts the king pin inclination angle off at road contact point causing the thrust of load on the spindles and wheel bearings and will

(TURN TO NEXT PAGE, PLEASE)

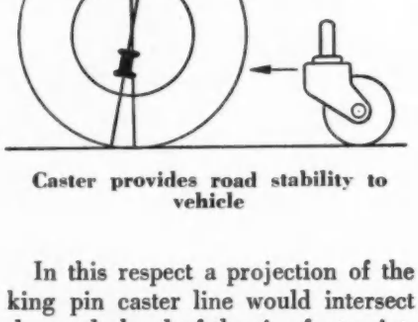
Wheel and Frame Alignment

(Continued from Page 57)

also cause king pin bushings to wear out faster.

Camber should never be corrected until it is determined whether king pin tilt is correct. A bent spindle will change the camber as will a loose wheel bearing or a worn king pin bushing—and camber correction will not correct it. If camber is wrong and the king pin angle is correct, it is possibly due to a bent spindle. On the other hand, if camber is incorrect because of a bent spindle, bending of the axle will throw king pin angle out. Final measurements should be made after excessive play has been removed from king pin bushings, wheel bearings and control arms. Tires must be properly inflated before any alignment check is made, and the floor or rack must be level for proper adjustments.

Another common cause of hard steering complaints is too much caster. Caster is the backward tilt of the front axle or steering knuckle at the top, giving a trailing effect to the wheel.

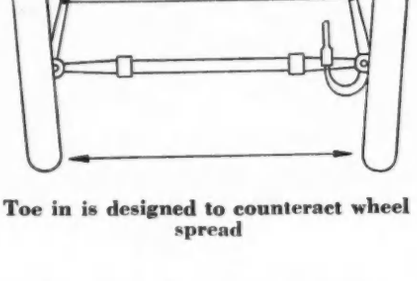


Caster provides road stability to vehicle

In this respect a projection of the king pin caster line would intersect the road ahead of the tire foot print, giving the wheel a trailing effect similar to that of a bicycle front wheel or a bed caster.

The caster angle counteracts the raising or lowering of the axle ends when the wheels are turned, inclining the wheels in the direction of the turn and thereby relieving a portion of the thrust on the bearings, spindles and king pins. This quality also aids the vehicle to straighten out automatically after a turn, preventing tendency to wander or weave.

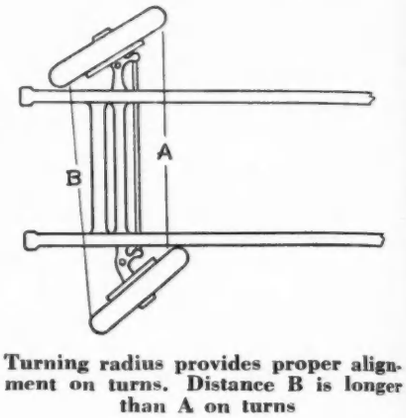
Caster is given to the assembly by the mounting and location of the front springs. It is apparent then that any change in the curvature of the springs will change the degree of caster. Too heavy loads, by causing spring sag, will change caster and make for hard steering. Weak, sagging or broken springs will account for the same condition. A twisted axle will cut down lead and make the vehicle difficult to control. Low tire pressure at the rear will account for hard steering for the same reason.



Toe in is designed to counteract wheel spread

Toe-in, or the pulling of the front wheels together at the front, is placed in an assembly to counteract any tendency of the wheels to spread with loads under normal rolling. The primary purpose of this setting is to compensate for normal wear of parts in order to keep the wheels in a straight ahead position. If the straightaway adjustment is out or if wear allows the wheels to roll outward, the wheels will not only be hard to turn but excessive tire wear will result. Vehicles today are designed for as little toe-in as possible, and adjustments should be held to manufacturers' minimum recommendations for best steering control and tire life. Manufacturers insist that failure of fleet shops to hold adjustments to close tolerances is one of the major causes of premature tire wear and steering troubles.

Turning radius is designed in the front end to provide proper wheel alignment on turns. In other words, the inside wheel would normally slide more than the outside wheel on a turn since the inner wheel travels in a smaller circle. On a turn the outer wheel determines the path of the vehicle so that the inner wheel would have to adapt itself by sliding were it not for steering geometry.



Turning radius provides proper alignment on turns. Distance B is longer than A on turns

This condition is controlled by the angle between the plane of the steering arm and the backing plate and will vary with vehicle wheelbases. Many times a front end will measure up to manufacturers' specifications in every way except in steering geometry, yet mechanics fail to consider this as a cause of tire wear and steering difficulties.

Frame and Axle Alignment

OTHER conditions causing hard steering can be attributed to a shifted front axle. Such a condition may be caused by an unwound front spring eye, by mismated springs, a broken leaf or improper installation of the springs. This last condition can be determined by measuring from the spring eye to the center bolt. Distances should be alike for both springs, and the distance from the center bolt to the front eye should be shorter than from the center bolt to the rear eye.

A sheared or badly worn center bolt may allow for misalignment of the axle and result in steering troubles. Misalignment of the axle usually shows up in shifting of the springs. When the axle takes a new position, there is a twisting movement set up in the U-bolts against the side of the spring eaves. Sometimes a shifted axle may show up only under uneven tension against the rear axle when the vehicle is in motion. This condition can be ascertained by using a pinch bar to check looseness in springs, pins, bushings and radius rods. Any unusual movement occurring in the rear axle suspension may point to misalignment possibilities.

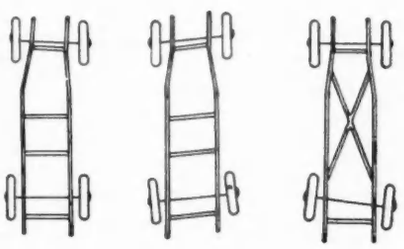
For satisfactory steering and tire

life the front and rear axles must be square with the frame and the rear wheels must track with the front when in the straight ahead position. Chassis misalignment is generally the result of abuse or shock from collision.

Shimmy or Wheel Tramp

ANY number of conditions may be responsible for low speed shimmy (at moderate speed), or wheel tramp (at high speed), but the underlying cause in practically all cases is unbalanced wheels. Wheel balance is the combination of balance of the wheel, hub, brake drum, tire and tube. Two types of balance enter into this, static and dynamic. Dynamic balance requires that the weight be distributed evenly in all directions from the axis of rotation or spindle so that the assembly is balanced with the centrifugal force of turning.

Shimmy at high speed can be caused by bent rims or bulging tires. A crooked wheel will cause shimmy, hard steering and spotty tire wear.



Swayed frame (left), diamond shaped frame (center) swung rear axle (right)

While caster is rarely the cause of low speed shimmy, it will permit this condition when the king pins and steering linkage are worn. A slight variation in caster, that is, difference in adjustments between right and left wheel, may set up a vibration similar to low speed shimmy. Reduction of caster may eliminate shimmy, but it does not correct the cause.

A twist or jolt occurring on a rough road will sometimes loosen or break a front body bolt, a condition which may allow for a vibration which can produce a shimmy at high speed, when combined with the vibration of unbalanced wheels.

Any play due to worn shackles and bushings will contribute to this condition. Worn parts can be tested by prying between the springs and the frame with a pry bar. A loose or broken spring hanger may be detected in this manner. Side play of the springs on the shackle bolts may also be detected in this way.

Rubber shackles may allow for the forward and backward shifting of the rear axle permitting a similar vibration. Weak front or rear springs may permit vibration at high speeds in that they change the caster setting. Low rear springs may sometimes be corrected by inserting flat shims between the axle and the spring, but replacement is recommended.

Maladjustments in the steering mechanism will cause either low or high speed shimmy, especially if parts are worn. A sheared spring, tie bolt or a shifted front axle will cause this condition as will worn wheel bearings, particularly in the rear wheels.

Tire eccentricity or radial runout will cause tire bounce, resulting in oscillation or shimmy at high speed. For this reason ⅛ in. is considered the maximum permissible eccentricity on the tread of a tire.

On light trucks weak or dry shock absorbers may allow rapid bouncing or vibration of the springs and result in poor steering and shimmy. A bent rear axle shaft may cause vibration at high speed, which is transmitted through the frame and steering column to the front wheels. Loose engine mountings will set up a similar vibration through the vehicle which is sometimes mistaken for high speed shimmy, especially on vehicles without rubber engine mountings.

(TURN TO NEXT PAGE, PLEASE)

TROUBLE SHOOTER'S GUIDE

I. HARD STEERING
- Too much caster
- Excessive, positive or negative camber
- Bent, worn king pin
- Sprung spindle
- Broken frame
- Sagging, broken spring
- Weak rear springs
- Underinflation
- Tight steering assembly
- Worn out steering
- Insufficient lubrication

II. LOOSE STEERING
- Worn steering linkage
- Weak springs in drag link
- Worn king pins, bushings
- Improper steering adjustment
- Worn tie rod ends
- Worn sector shaft bushing

III. WANDER OR WEAVE
- Insufficient caster
- Incorrect toe in adjustment
- Worn king pins, bushings
- Worn front wheel bearings
- Tight steering assembly
- Loose spring shackles
- Sagging, broken springs
- Bent, broken frame
- Loose U-bolts
- Overloading
- Unequal tire pressure
- Unequal tire wear

IV. LOW SPEED SHIMMY
- Too much caster
- Loose king pins
- Loose drag link arm
- Loose steering gear
- Loose wheel bearings
- Misaligned drag link
- Sagging, broken springs
- Worn tie rod ends

V. HIGH SPEED SHIMMY
- Eccentric wheels, tires
- Out-of-balance wheels
- Broken, sagging springs
- Wheel or tire wobble
- Underinflation—front tires
- Unequal inflation
- Whipping propeller shaft
- Broken front body bolt
- Loose engine mounting
- Worn rear wheel bearings
- Worn universal joint
- Bad shock absorbers

VI. ROAD SHOCK
- Unequal casters
- Excessive caster
- Sprung front axle
- Weak springs
- Bent steering arm
- Bent drag link
- Improper tire size
- Defective shock absorbers

VII. SIDE PULL
- Unequal caster
- Bent steering knuckle
- Bent, broken frame
- Tight king pins
- One weak rear spring
- Unmatched tires
- Uneven inflation
- Oil-soaked brake lining
- Sagging front springs

VIII. ERRATIC BRAKING
- Low, uneven tire pressure
- Incorrect brake adjustment
- Weak front springs
- Bent steering knuckle
- Oil soaked linings
- Insufficient or uneven caster

IX. SCUFFED TIRES
- Incorrect toe in
- Incorrect toe out on turns
- Bent steering arm
- Bent spindle
- Improper tire inflation
- Wheel or tire wobble

X. CUPPED TIRES
- Uneven caster
- Worn king pins, bushings
- Loose wheel bearings
- Unbalanced wheels
- Bent, twisted axle
- Underinflation
- Dragging brakes

Wheel and Frame Alignment

(Continued from Page 59)

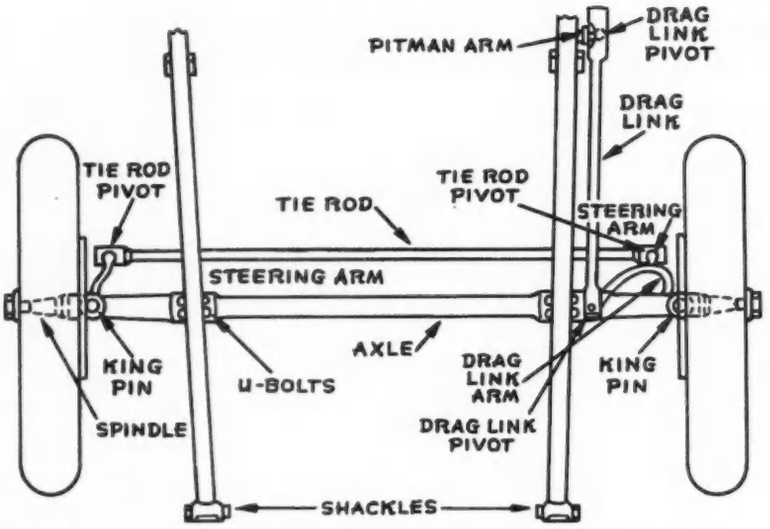


Diagram locates points in the suspension and steering system where wear, misalignment and maladjustments will affect wheel roll

Wander, Weave Instability

WANDER, weave, side pull or instability at high speeds may be the result of several conditions. All will be considered as part of erratic road-ability of the vehicle. Wander or weave may be caused by under-inflation of the rear tires, a condition which changes the caster settings. By the same token an over-loaded vehicle will fail to hold the road as will a truck with weak, broken or sagging springs, either front or rear.

Unequal caster causes instability at high speeds. If the difference is considerable, the vehicle will have a tendency to pull toward the side with the least caster. Unequal caster when combined with an incorrect straight-away adjustment will cause a definite lead to one side. Worn king pins and bushings make it impossible to hold the wheels in the straight ahead position and will cause road wander. Loose wheel bearings and steering linkage ball joints produce the same conditions and result in excessive tire wear.

Too much caster which is not great enough to cause low speed shimmy will cause road shock at the steering wheel and will eventually cause excessive wear in the steering mechanism. Body roll, if not controlled by stabilizers, proper springs or shock absorbers, will cause wander at high speeds. This condition will be present due to roughness of the road, road crown or cross winds, if adjustments are incorrect.

A cause of wander, weave and road instability frequently overlooked is a tight steering assembly. This can be caused by tight tie rod pivots, out-of-round rod balls, bent king pins, too tight a worm adjustment of the steering wheel, too tight a cross shaft adjustment, a bent or sprung steering column or a dry steering gear box. All these conditions will produce erratic steering because the wheels fail to return to the straight ahead position after being turned.

Characteristic Tire Wear

GENERALLY premature wear is a result of several conditions in the vehicle alignment. It is possible to pick out the more visible evidence of tire wear and locate the alignment error—with reservations. It is recommended, however, that if tire wear is evident upon inspection, the vehicle be given a complete alignment check with the proper equipment.

Excessive toe-in causes scuffing of the front tires, resulting in a feather edge on the inward side of the tread blocks. Excessive toe-out causes feathering of the edge of the tire on the outward sides of the tread blocks. If scuffing shows up on both front and rear tires, it is possibly due to improper tracking of the vehicle. Feathering on rear-tire treads will also suggest improper alignment due to a bent axle housing, a slipped axle, loose U-bolts or worn spring eyes or shackles.

Unbalanced wheels show up in worn spots on the tread, either pitting or cupping. Pitting, often invisible to the eye, can be felt as small irregular depressions on the smooth surfaces of the tread. Unbalanced wheels help to form flat spots, cups, waves and gouges.

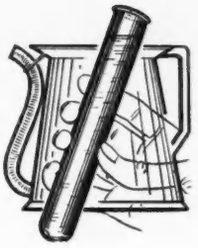
Underinflation causes excessive wear on the shoulders of the tire, while over-inflation will show up in wear on the center part of the tread.

Excessive camber has the effect of deforming the tread of the tire so that it takes the form of a cone with the outside edge of the tread actually revolving on a shorter radius than the inside of the tread. Sometimes this wear takes the form of deep depressions or waves of heel and toe wear.

Alignment trouble most frequent in rear assemblies is negative camber, caused by sagging of the axle due to overloading. A sagging axle causes more load to be thrown on the inside dual while there is a tendency for the outside tire to be raised from the road. The overload on the inside tire results in wear similar to under inflation, with excessive shoulder wear, sidewall failures and broken tire beads. The outside tire develops fast tread wear as it bounces and is pulled or dragged over the road. Conditions similar to these result from mismating of the dual wheel assembly.

Several worn spots found on the circumference of the tire are usually caused by a wobbly wheel, while wear on one spot on the tire may be attributed to grabbing brakes or out-of-round brake drums. Again, a wear in one spot might be due to an unbalanced wheel, so checks should consider this possibility. Uneven wear in no particular pattern can be due to springs that are too flexible, permitting too great a variation in camber, caster and toe-in.

One of 20 vehicles used in the synthetic oil tests by General Baking Co.



TESTS TELL

Results of Synthetic Oil Use by Two Retail Delivery Fleets

by C. J. McARDLE, **Director of Trans., General Baking Co., N.Y.C.**

Dirty engines cleaned up; overhauled engines sludge-free; carbon and valve work reduced

by E. W. SCHROLL, **Fleet Manager, Little Falls Laundry Co. (N. J.)**

Oil economy improved; no trouble from clogging; sludge formation and rusting negligible

General Baking Co. Test

IN SEPTEMBER, 1944, General Baking Co. took advantage of the opportunity to make a year's test of No. 300 synthetic motor oil in 20 delivery trucks of the Brooklyn, N. Y., South Bakery fleet. This fleet serves a congested metropolitan area where delivery trucks make very short runs with frequent starts and stops. Daily vehicle mileage averaged 15, with a low of 6 miles per day.

Excessive gasoline dilution and sludging had always been a problem in this fleet when using straight petroleum oil, and no means had been found for overcoming this problem. The purpose of the test was to determine if the synthetic oil would alleviate the sludge condition and give improved engine cleanliness. The test of synthetic motor oil actually continued for 15 months and accumulated a total of 105,000 miles.

Fifteen of the test vehicles are rated 1½-ton capacity; four vehicles, 1-ton, and one, 3½-ton. Sixteen vehicles were powered by L-head V-8 passenger car engines, two by 6-cylinder, L-head passenger car engines, and two by 6-cylinder, L-head truck engines. At the start of the test, the average age of the vehicles was seven years, and the odometer mileage on the 19 light-delivery vehicles ranged from 14,500 to 69,000 miles. The 3½-ton truck had registered 114,000 miles. Correlation between engine and vehicle mileage is not generally possible, since engines are replaced with standard rebuilt short assemblies when further repairs are necessary, after rings and other necessary parts are once replaced to correct oil consumption.

Lubricant Analysis

PREVIOUS to the installation of synthetic motor oil, straight petrolium oil, SAE 30, was used in this fleet, and gasoline dilution together with viscosity decrease, as determined by the General Baking Co. laboratory, controlled oil changes. Gasoline content of 8.5 per cent was considered the limiting value. Oil filters (cotton-waste type) were replaced when naphtha precipitation by volume exceeded 2½ per cent.

The No. 300 synthetic motor oil test was started with the same oil and filter change procedure. Lubricant samples were taken every 250 miles on the low daily-mileage trucks, and every 500 miles on the higher mileage vehicles. Besides the oil samples checked by the General Baking Co. laboratory, duplicate samples were inspected by the lubricant manufacturer for viscosity change, ash content, free and total acid, and water and gasoline content.

In this typically "cold engine" driving service, fuel dilution with resulting viscosity decrease has been the critical factor determining oil change mileages. It was found that gasoline dilution and viscosity decrease correlated satisfactorily in the synthetic oil. Shortly after the start of the test, it was agreed to increase the oil change dilution point from 8½ per cent to 15 per cent. In No. 300 synthetic oil, 15 per cent gasoline content corresponded to a viscosity decrease of about 50 per cent, which meant a minimum viscosity of approximately 150 SUS at 100 deg. F.

The cleanliness of filter elements changed on 2½ per cent naphtha precipitation indicated that the naphtha insolubles test, often giving values above 10 per cent was not a suitable method for determining the need of filter change with the synthetic lubricant. These naphtha insolubles apparently were largely petroleum

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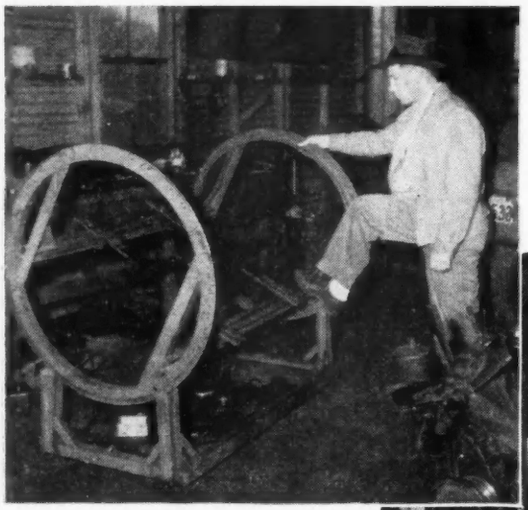
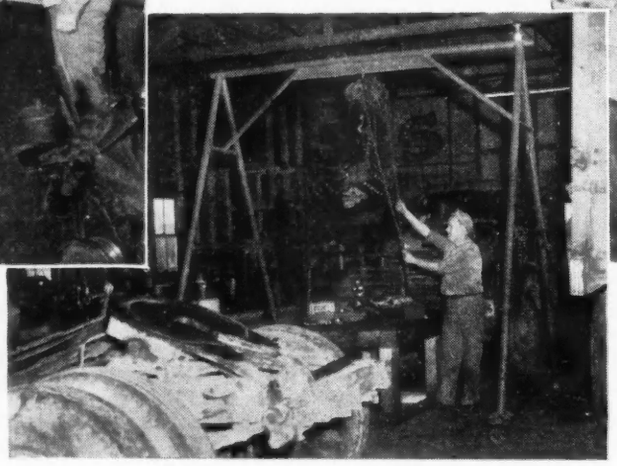
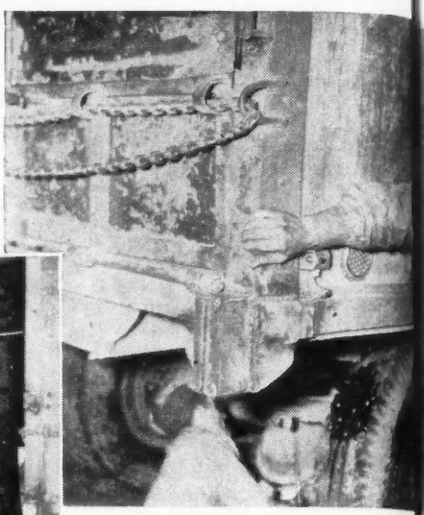


Above. Shop-made engine stand can be revolved 360 deg., locked in any position. Adaptors hold all engine types

Below. A-frame crane is made of welded pipe, can straddle tractor hood to make engine removal easy





Above. Welded angle-iron box protects entire rear end of trailer from damage by bumping the dock

A Mid-Way Shop Devises Special

300-vehicle common carrier concentrates major maintenance at central location where shop-made tools and equipment, plus thorough methods, decrease service frequency

ONE OF THE THINGS that makes our maintenance and repair program different from others is that we approach it from a different angle.

While we advocate and practice preventive maintenance as far as possible, the attitude here at the main shop is that we take what is sent to us and try to make a repair, improvement or change that will keep it out of the shop longer.

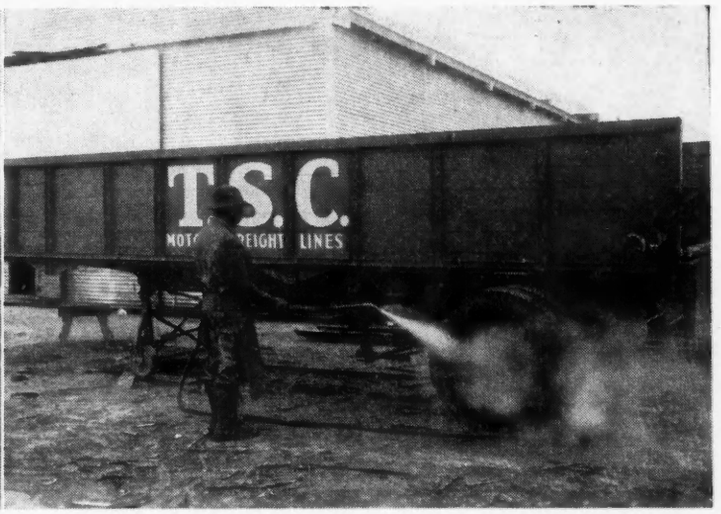
That attitude is necessary because so many of our units are so far away from the main shop and maintenance, as such, is carried on at more than a dozen different points in the T. S. C. system. Consequently our work is concerned mostly with repairs and replacement.

Lafayette, La., is a division point between Houston, Tex. and New Orleans, La., and after due consideration we located the main shop here about a year ago. At the same time, we formulated a basic plan for our repair operation which mostly is based on having on hand rebuilt engines, rear ends, transmissions and other parts which can be shipped out to our other shops for installation.

We have 70 tractors and trailers on the road all the time and about 300 units of all kinds including bobtails, pickups and other equipment.

Outfoxing Trouble

BECAUSE so many of our repair jobs are sent to other points for installation where they operate their



Left: Front guard, made up from welded pipe is tied in with bumper. It costs little, does a real job of protecting fenders, lights and radiator grille

Right: Thorough steam cleaning of all equipment is "routine" before each major inspection. Author says it permits faster work and shows up defects

Equipment, Thorough Procedures

by A. DE LARUE
Maintenance Superintendent
T.S.C. Motor Freight Lines
Lafayette, La.

life span under the supervision of others, we figure that we can make the most profit for the company by trying to analyze failures that occur before their time, make changes that will eliminate trouble, and to prolong life of the equipment by reduction of wear when possible.

In order to put the repair shop on an efficient, steady and deliberative basis which allows for best work, we first built up a reserve of units and constantly maintain two or three tractors and trailers in reserve which can be used to replace equipment that needs to come into the shop. Then we try to put as much work through the shop as is consistent with best work. Thus we eliminate the hurry-up or emergency job.

In other words, we are not required to repair a fuel pump and leave a light bracket or a fender until the unit comes by on the next trip. We get them all and deliver to the transportation department an outfit that has been inspected, repaired and tightened up from stem to stern and sometimes repainted.

In using this system we have found out that sometimes the lack of replacement of some of the cheapest parts in an assembly will contrive to wear out the expensive part before its time.

I have in mind clutch repairs. When a clutch starts slipping the obvious thing to do is to install a new one if the lining has worn down to the replacement stage. We used to replace these as a matter of course. Now we want to know how many miles it ran or how long it has been in service.

Too many have worn out before they should and in our battle to keep our units on the road longer between visits to the shop, we discovered that many clutches are worn out because of many causes besides normal use.

A warped or crooked flywheel is a notorious offender. Worn clutch pedal shafts also cause undue wear and erratic action.

Now when we replace a clutch we steam clean all the parts and examine them minutely for wear, cracks and flaws. We particularly inspect all the linkage and if there is more clearance than provided by factory tolerances we replace or repair.

Flywheels that are warped, worn clutch release levers, clutch pedal shafts and all the linkage when badly worn, are replaced and when the job is done we have a clutch that will go out and do a job as long or longer than one new from the factory.

Along with our repair program we sometimes make small changes that save time and tempers for drivers. We put our spare tire underneath on some of our tractors. When making changes the clamp bar and nuts are sometimes lost. We fasten this with a

(TURN TO PAGE 124, PLEASE)

USE POSTCARD — NO STAMP NEEDED

PUBLICATIONS

A selected list of the latest in literature — books, pamphlets, catalogs — chosen by the staff to help fleet operators solve maintenance and operating problems. Use the postcard.

L108. Wheel Alignment

Fleets having trouble with rapid tire wear and steering troubles will appreciate the up-to-the-minute information outlined in two new publications now available from a well-known tire manufacturer. A few minutes' study of this data will enable operators to determine what is wrong with their operation and how to correct the various mechanical difficulties contributing to premature tire wear and improper steering.

One pamphlet, "Simple Mechanics of Wheel Alignment," presents in simple form the principles of steering angles, their functions as well as characteristic tire wear resulting from improper adjustments.

Schematic drawings help to clarify important points, so that the mechanic, with a little study, will clearly understand important principles of the various steering angles. With this as a background, he will be able to complete the service and checks of the system in a scientific manner.

The pamphlet, "Practical Explanation of Wheel Balance," treats of balancing wheels statically and dynamically in the same manner as the previous publication. Simplified drawings show the correct procedure for this service, while the easily-read text provides data which should be highly prized by any service man.

These pamphlets were made available in the interests of safety and tire conservation. Let them improve your operation and save you money. Writing L108 on the free postcard will bring both publications without delay.

L109. Battery Service

Here is an outstanding battery service guide which should be highly prized by men in the fleet field. Battery maintenance will be simplified with a few minutes study of this 16-page manual.

Starting with a description of the operation of the storage battery, the manual answers such questions as how to correctly install the unit, how to use the hydrometer, how to prevent corrosion, etc.

In addition, various maintenance and operation notes are outlined, such as adding water, adding electrolyte, keeping the battery clean, and maintaining the unit in a healthy state of charge.

Diagrams and cut-away views show use of instruments as well as the internal construction of the battery. The final division of the manual is devoted to a chart showing freezing points for various stages of charge and a list of potential troubles with their causes and cures.

Write for this valuable booklet today and ask your mechanics to read it. The number, L109 on the free postcard will order it for you.

L110. Hydrovac Manual

"What to do and how to do it" is fully illustrated and explained in a new Third Series, Model C Hydrovac service manual now available to repair shops and fleet owner personnel.

Text matter is divided into four main classifications; principles of operation, bleeding the system, identification of units and bench overhaul. Each section is illustrated by photographs, sectionals and exploded views.

The new manual will be a highly prized reference source for mechanics servicing brakes equipped with the Hydrovac. Get your copy by writing L110 on the free postcard.

L111. Diesel Data

Now available to the truck fleet field are a collection of graphs taken from test data compiled during a 3-year study of diesel operating factors. These graphs show, among other interesting facts, that a 20-lb. loss of compression due to liner wear causes a 9 per cent increase in specific fuel consumption.

Other data in the study show how loss of compression causes power waste, overheating, increased oil consumption, starting difficulties and roughness of operation.

This valuable data has been taken from actual operation and will provide the fleetman with authentic facts that will help him to secure better diesel performance. Write for this collection of graphs today. L111 on the free postcard will secure it.

L112. Transport Law

A comprehensive study of the road laws regulating trucks and trailers throughout the United States has been compiled in a booklet form and made available to truck fleet operators. The booklet is the eighteenth edition of the size and weight restrictions to be published by this company since 1933.

The laws regulating the size and weight of trucks and trailers, as all truckers know, are enacted by the legislatures of the states. Each state has its own method of regulating trucks, making it necessary for the truck and trailer manufacturers and operators to use caution in the sale and operation of their equipment to make sure that they do not conflict with the laws existing in the state or states in which the vehicle is to operate.

A comprehensive knowledge of road laws is of vital necessity if the vehicle operation extends over more than one state, for while a unit may be legal in the state in which it is registered, it may be illegal in neighboring states in which it also proposes to operate. The various state road laws are subject to conditions of the courts and other rulings, making it necessary to consult the state authorities of each state for interpretation of many points of their laws.

Extreme diligence was exercised to eliminate errors in this most recent compilation of the laws and regulations limiting the size and weight of trucks and trailers, by securing the cooperation of the officials in each state. These officials have checked and approved the laws of their respective states and the compilation is believed to be correct in every detail.

This valuable data, attractively printed in 52 pages of vest pocket size, is yours for the asking. Just write L112 on the free postcard for a copy.

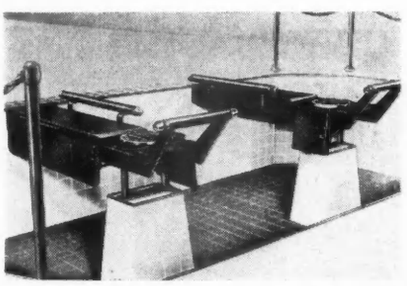
USE POSTCARD — NO STAMP NEEDED

NEW PRODUCTS

The newest in replacement parts, accessories, shop equipment and supplies. For more details of products described and illustrated on these pages, use accompanying free postcard.

P263. Alignment Rack

The new Weaver Model WJ-112 Wheel Alignment Outfit is designed for service departments with limited floor space. This installation retains the high degree of accuracy required for checking and correcting service without absorbing the floor space necessary for the usual elevated "rack."



The depressed floor area of the WJ-112 gives the mechanic the advantage of a comfortable working position, according to the company.

The WJ-112 handles wheel alignment checking and correcting on all makes of cars and light trucks.

Use Free Postcard for More Details.

P264. Fuel Additive

Zorbit, a new product designed to prevent frozen gas lines, is being introduced by R. M. Hollingshead, Corp., Camden, N. J.

Added to the gasoline in the tank, Zorbit is said to absorb moisture which is present in the tank and throughout the fuel system, thus preventing frozen gas lines.

In addition to its major purpose of preventing freezing, Zorbit also dissolves gums which clog carburetor jets and prevents the fouling of spark plugs.

Use Free Postcard for More Details.

P265. Hood Jack

Radiator Specialty Co., Charlotte, N. C., manufacturers of the Solder Seal products, announced a new automotive service product called "Saf-T-Jack," a patented jack to fit all hoods, deck lids, and doors. The Saf-T-Jack is adjustable from 28 to 50 in. with non-skid rubber ends, holding up hoods and doors while working on engines.

Use Free Postcard for More Details.

P266. Tire Demounter

A new tire demounter, known as Presto Model B-1, has been placed on the market by Lee Engineering Co., Pawtucket, R. I. This manually-operated unit incorporates the rugged Simplex-Jenny center-hole hydraulic jack which develops over 60,000 lbs. pulling pressure.

The demounter removes the most stubborn tire without injury to tire, tube, wheel or rim and may be operated to capacity by a boy. It is quickly adjustable to demount any size tire from 7.00-15 to 24.00-24 on trucks, buses and heavy vehicles.

Construction is entirely of steel. The Presto B-1 demounter is portable—it does not require any source of electricity or air and is ready for instant use anywhere.

Use Free Postcard for More Details.

P267. Wheel Dolly

Of interest to the truck maintenance departments is this new Dual Wheel and Tire Lift which is said to make wheel pulling easy.

One man can jack wheels clear of ground, close the lift about the tires and then roll the wheel assembly away with a minimum of effort. It is extremely strong and handles either single or double tires from 6.50 to 14.00.

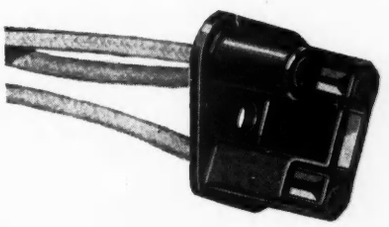
This product has been placed on the market by the Lewis Tire Equipment and Supply Co., Inc., Denver, Colo.

Use Free Postcard for More Details.

P268. Lamp Connectors

Cole-Hersee Co., Boston, Mass., is now producing its No. 3029 sealed beam connectors with wire leads.

The connector embodies features necessary for good performance. A new preformed, bronze silvered contact is used.



These contacts are locked into a bakelite housing with three 12 in., 14-gage wire leads attached by means of a special locking arrangement which permits the wires to be held securely in place without strain.

Use Free Postcard for More Details.

P269. Pump Diaphragm

Hygrade Products Co., Long Island City, N. Y., has developed a fuel pump diaphragm material that reputedly will last for the life of the pump. It is practically unaffected by grease, gasoline, kerosene, alcohol and aromatic fuels, retains its flexibility at low temperatures and is flare resistant, according to the manufacturer.

This diaphragm, known as the Monoflex, is made of a Nylon base (single layer) vulcanized with a synthetic substance. It is extremely flexible yet will not stretch, hence it maintains a uniform pressure throughout the life of the pump.

Use Free Postcard for More Details.

(TURN TO NEXT PAGE, PLEASE)

NEW PRODUCTS

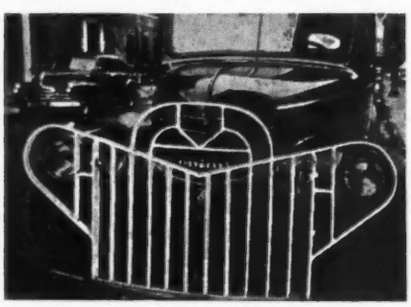
USE POSTCARD — NO STAMP NEEDED

(Continued from Page 65)

P270. Grille Guards

The Bustin Iron Works of New York announces a new grille guard designed especially for the Chevrolet Truck.

These all-steel grille guards are designed and built with sufficient structural strength to be real protection and are mounted in such a way that all forces are conveyed through properly designed members to parts of the chassis that can stand the strain. All guards are supplied with either patented flat mounting plates or



steel arms for easy installation and offer efficient protection to the vulnerable parts of the front end.

Grilles for the following trucks are available: Dodge, International, Diamond T, Federal, Ward LaFrance, Studebaker and White; also for Cab-over-Engine models on Dodge and Autocar.

Use Free Postcard for More Details.

P271. Power Presses

A new type of hydraulic power press has been announced by Aristo Power Tools, Inc., Chicago, built in 8- and 20-ton capacities.

The AristoCraft Power Press is said to offer adaptability because the power unit can be removed and used separately as a portable lifting jack. The 8-ton capacity press incorporates an 8-ton Blackhawk jack, specially designed for inverted operation in the press. Within 30 sec the jack can be removed from the press for use as a portable lifting jack.

The 20-ton press incorporates a 20-ton Blackhawk Porto-Power unit readily detachable from the press crown for use as a portable jack for a wide variety of lifting, pulling, pushing, and clamping operations.

The 8-ton press has an arc-welded frame capable of withstanding a 20-ton load. The 20-ton press has an arc-welded frame capable of withstanding a 50-ton load.

Use Free Postcard for More Details.

P272. Arc Torch

A new Arc Torch has been added to the line of "Knock-Out" A.C. Arc Welding equipment according to an announcement by the K. O. Lee Co. of Aberdeen, S. D.

The Arc Torch has several new features including feather touch slide control providing fast make-and-break of the arc flame with a touch of the thumb. When the slide control is off the torch is shockproof, won't "flash" when laid down and is safe for adjustment or replacing of carbons.

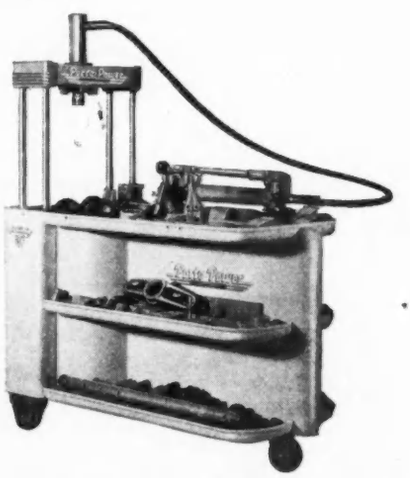
The torch is lightweight, 1¼ lb., easy to handle and uses ⅜ in. and ¼ in. carbons interchangeably without adapters, according to the announcement.

Use Free Postcard for More Details.

P273. Porto-Power Unit

A new Porto-Power unit, the model, S-200, has greatly enlarged utility over its prewar ancestor, according to its maker, the Blackhawk Mfg. Co.

A hydraulic wedge along with 4-ton midget rams and 7-ton short rams are now included in the top assortment in the Porto-Power line. Only one pump and hose, however, are needed to serve all of the rams.



The new portable stand is finished in white and chrome, to match other major service equipment. The S-200 Porto-Power has large exposed side and top trays. Two large rigid wheels and one swivelling wheel permit portability.

Use Free Postcard for More Details.

P274. New Spark Plugs

Now available for truck operators is a new series of spark plugs manufactured by The Electric Auto-Lite Co.

The new spark plugs, called "Transport Plugs," are designed for long life and arduous service. The new plugs have a wider heat range than heavy duty types previously made by Auto-Lite by virtue of increased length of the firing tip on each range of the plug.

Electrodes in the new spark plugs are heavier for longer gap life and are designed for longer periods of operation between cleaning and regapping.

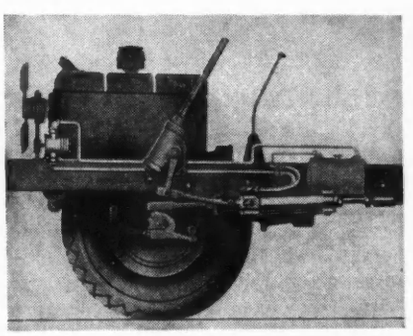
The new "Transport" insulator has a higher thermal conductivity, a higher mechanical strength and is extremely resistant to attack from lead in high octane fuels. The plugs are available in 14 mm., 18 mm. and ⅞-18 thread sizes.

Use Free Postcard for More Details.

P275. Hydraulic Steering

Vickers Inc., Detroit, Mich., announces mass production of a redesigned hydraulic power steering system.

The redesigned booster includes many new features: simplified installation, cost reduced over one-third, 13 per cent lighter weight and more rugged and compact construction.



The redesigned steering booster assures the driver of effortless, positive and shockless steering of vehicle regardless of road obstructions, blowouts, ruts, sand, gravel or crosswinds, according to the manufacturer.

The Vickers hydraulic steering system is easily adaptable to new and existing designs of buses, trucks and maintenance equipment, the company states.

Use Free Postcard for More Details.

P276. Plastic Hammers

Ten new hammers with hard plastic tips and two with extra soft tips have been brought out by the Plomb Tool Co., Los Angeles, Cal.

These hammers use a revolutionary plastic, known as Nuplaflex, which is intended for threads, for painted, polished and plated surfaces, and for any parts that would be marred, scratched or otherwise damaged by metal hammers. Advantages of the new plastic, claimed by the manufacturer, include: (1) Recovers its original shape when bent, dented or cut; (2) resists chipping and does not crack or flake off under hard blows; (3) has longer life than most others; (4) is non-explosive; (5) is non-sparking; (6) won't burn readily unless held in a direct flame; (7) is oil and grease resistant; (8) absorbs most of sting-causing vibration, and (9) reduces rebound to a minimum.

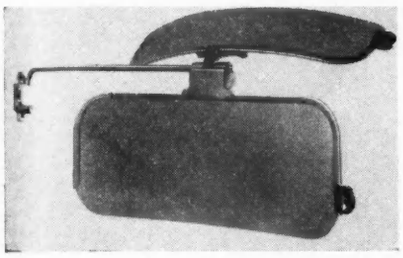
Tips of the same size are interchange-

able, so that a hard tip and extra soft tip can be used on one hammer. Tips are automatically locked when screwed into a head, but are easy to detach. Heads have a streamlined design. Hickory handles are octagonal and shaped to provide a sure grip.

Use Free Postcard for More Details.

P277. Safety Visor

A polarizing safety sun visor for bus and truck fleets has just been announced by Samuel Moore & Co. Known as the "Rub-Bub Polaroid Safety Sun Visor," the new product differs from conventional shields in that it "scientifically selects safe, glare-free light."



Through the use of Polaroid film, mounted between clear plastic sheets, the visor absorbs reflected polarized glare and passes only the soft, normal light.

For driving into direct sun rays, the visor includes a second, smaller Polaroid film that is also transparent but with the polarizing axis at right angles to the larger glare-controlling visor. When the two visors overlap, the driver sees through a darkened area which not only controls brightness of light but continues to remove glare as well. Through this brightness control feature, the driver can look close to the sun at sunrise and sunset without being blinded.

Use Free Postcard for More Details.

P278. Rust Remover

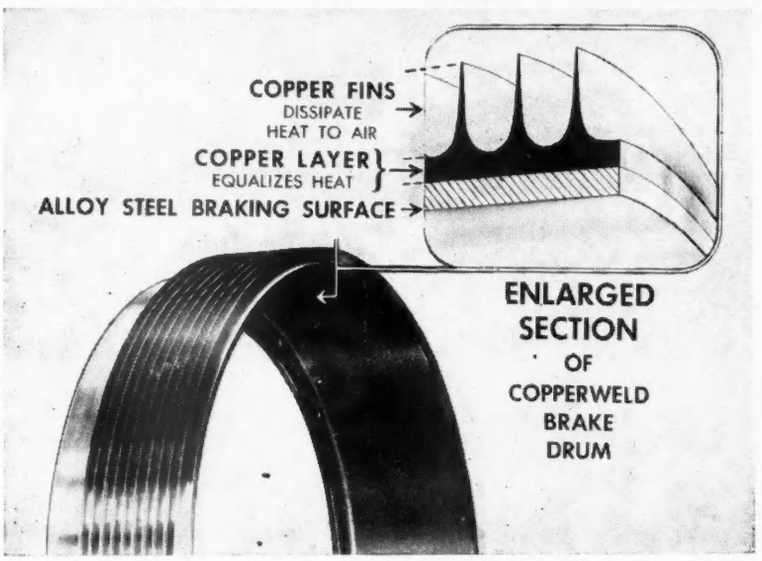
A liquid rust remover is now produced by Allied Products Co., Chicago, and marketed under the name CorOdex.

Claims for the new rust remover are that it is effective on any metal surface, that it will remove even the thickest coat of rust, that it is so penetrating it reaches pin point spots, pits, crevices, cracks or corners and that it can be applied in a minimum of time with a paint brush or cotton swab.

CorOdex requires no rubbing, is non-explosive, non-inflammable, and will not injure metal or the hands of the user. Small rust-coated objects may be treated by dipping the articles in a glass, jar or crock of CorOdex.

Use Free Postcard for More Details.

P279. Alloy-Steel and Copper Brake Drum



A new type of brake drum, designed to contribute greater safety and economy to the operation of trucks, buses and trailers, is announced by Copperweld Steel Co., Glassport, Penna.

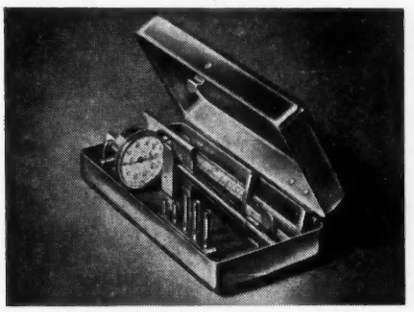
New principles of drum design and new methods of manufacture are employed in the making of this new brake drum, which has a friction surface of special wear-resisting alloy steel and an outside layer of copper with specially designed copper fins. Because of the high thermal conductivity of the copper, the Copperweld brake drum dissipates friction-generated heat to the atmosphere at a rapid rate—at the same time helping to maintain a more uniform temperature level over the entire brake drum surface.

The advantages claimed for this new development are lower temperatures—resulting in virtually no "heat checking," no cracking, measurably less wear on blocks and drums, and freedom from distortion, together with reduced temperatures on brake parts, tire beads, lubricants and running gear. Despite service conditions of the most severe character no instance of "fading" or loss of friction has been experienced during the field tests.

Use Free Postcard for More Details.

P280. Cylinder Gages

Design changes, that further simplify and speed each step in the testing of cylinders, have been incorporated in the setting tool handle cylinder gages manufactured by B. C. Ames Co., Waltham, Mass. Only seven of the precision-ground and lapped (to .0001 in.) gage rings in the setting tool handle are now required to cover each 1/16 in. step of the range of the Model No. 30 (2 3/16 in. to 6 in.). The number of indicator extension contacts has been reduced to five, and the centering sled is being made of stainless steel.



Standard equipment now includes a permanent, polished aluminum container, with brackets for safe-keeping the gage components when not in use. A new wall chart, packed in the case, gives simplified instructions and permits quick choice of gage-setting elements.

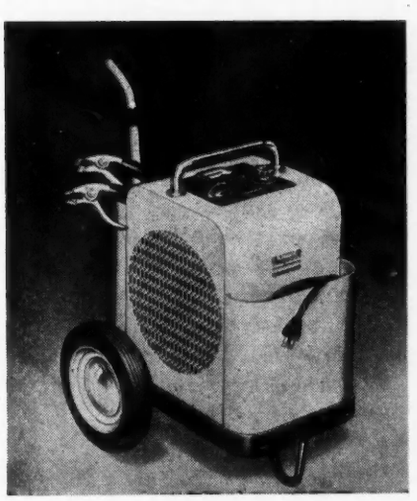
The No. 30 Cylinder Gage, regularly supplied with indicator reading in .001 in., can also be furnished with indicator reading in .0001 in. or .01 mm.

Use Free Postcard for More Details.

P281. Marquette Charger

Portable and fast describe the new Marquette Porto-Fast battery charger. It is designed for auxiliary charging service for small fleet owners.

The charger weighs only 60 lb but delivers a full 80 amp of charging power. It has a selenium rectifier and automatic



time control calibrated to show exact charging time for all specific gravity readings. Thermo type overload relay protects both battery and charger.

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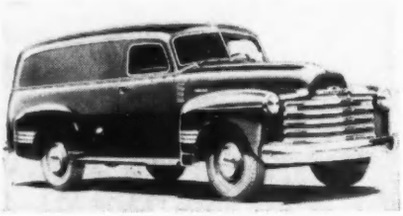
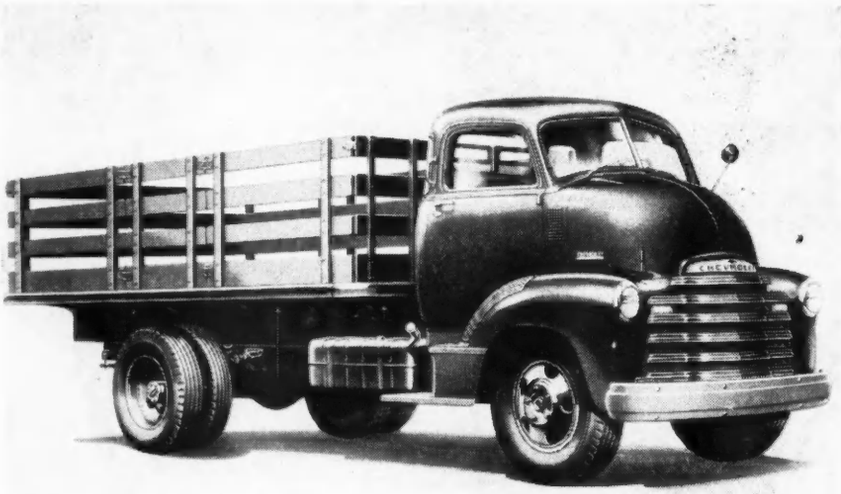
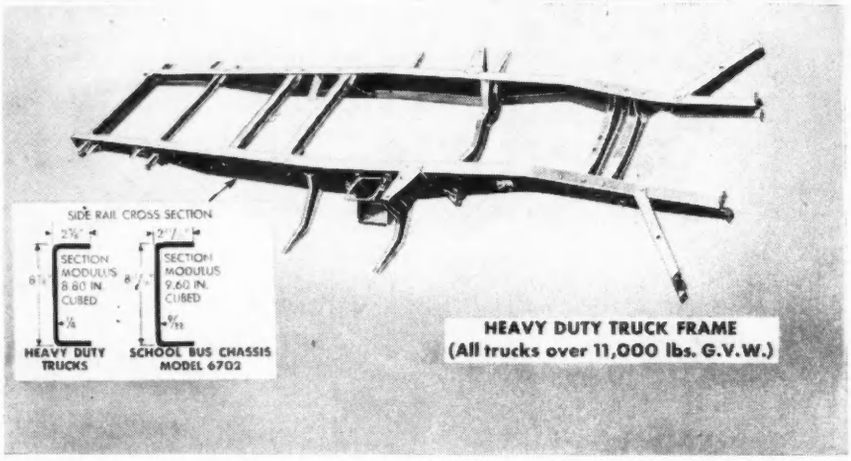


The ½-ton panel "Thriftmaster" model showing newly-designed front end and cab

The 1½-ton stake. Cabs, fenders, grille and hood are all new features





Top. The 2-ton, c.o.e. "Loadmaster" model. Wheelbases are available in 110, 134 and 158 in. Gross vehicle weight ratings have been increased; maximum is 16,000 lb. Above. Side rails of frames have been reinforced. Center right. Chassis vibration and frame weave have been eliminated.

Chevrolet Announces

BILLED AS "Advance-Design" trucks, the new Chevrolet line consists of the Thriftmaster (Series 3100, 3600, 3800) and Loadmaster (Series 4000, 5000, 6000) models. The utility of the conventional heavyduty trucks has been widened by an increase in maximum g.v.w. ratings. For example, the ratings of 1½-ton Specials—is upped from the former 14,000-lb. to 15,000-lb. g.v.w. The ratings of the Series 6100 and 6400 also have been increased to a maximum of 16,000-lb. g.v.w.

The Chevrolet line truck presents new and improved cabs and bodies which, in combination with new frames and increased CA dimensions, are said to provide a higher level of performance as well as convenience and comfort for the driver.

The two familiar Chevrolet valve-in-head engines power this line—the standard 216-cu.-in. engine being used in the Series 3000 and 4000; while the heavy-duty 235-cu.-in. engine is standard in Series 5000 and 6000. The larger engine is offered as optional equipment in the 4000 Series.

Some noteworthy detail changes have been incorporated in the engines. The oil control rings are now of wide slot design and are thus less susceptible to plugging with carbon. The water pump features a double-row ball bearing mounting for the shaft, permanently sealed and lubricated. The seal is of asbestos and Bakelite construction, said to give about twice the former life.

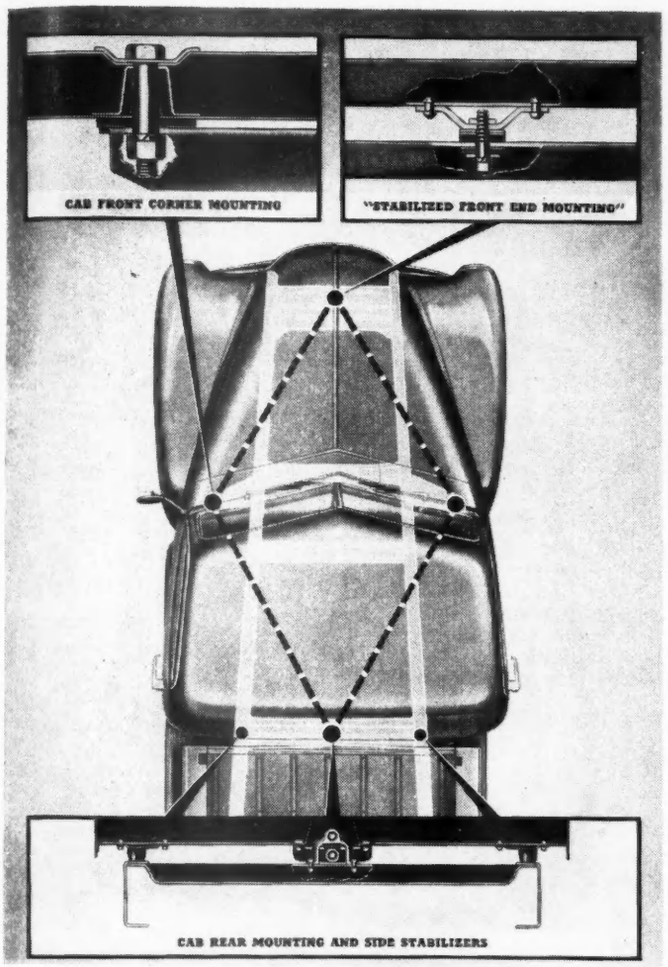
Cooling system capacity has been increased from 14 to 15 qts. on the light-duty models, from 16 to 17½ qts. on heavy-duty models.

Clutches are conservatively rated at 200-lb.-ft. torque and are said to have ample capacity for the engines used in this line.

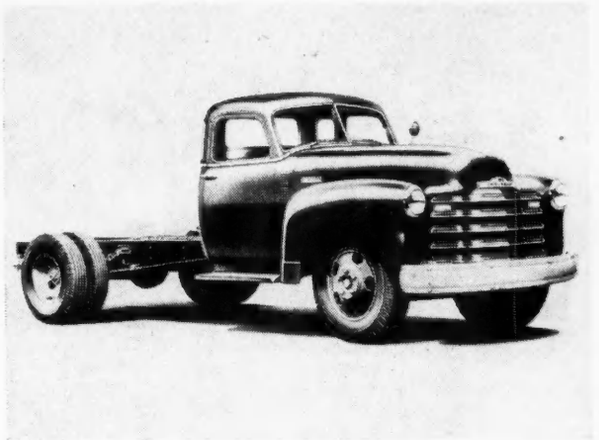
Three-speed synchromesh transmissions are used in the Series 3100 and 3600, the others being equipped with four-speed sliding gear transmissions. The latter, also available optionally on the Series 3100 and 3600, has provision for power take-off.

The steering gear is of recirculating ball nut and sector type, with larger and stronger steering columns on conventional truck models. Steering mounting is stronger and more durable, using a four-bolt mounting attached directly to the frame.

Except in the ½-ton models, the line features the familiar full-floating hypoid gear axle. Ratings of heavy-duty single-reduction and two-speed axles have been increased to 13,000-



Front of cab is mounted on single-point rubber mount. The new cab has a tension and shear mount at each corner, with a single shackle at the rear



The 1½-ton model. Corner panel windows eliminate blind spots and provide all-round vision. This feature may be obtained as option on conventional models. It is standard equipment on all c.o.e. models

Larger, roomier cabs with better visibility, less noise and vibration, temperature conditioning improve driver comfort. New frames and increased CA dimensions up load space

Trucks of "Advanced Design"

lb. on the tires. The rear tread on the 3100, 3600, and 3800 Series has been increased to allow for wider bodies. On the 3100 rubber insulated spring seats are used. They are said to be more durable, quieter, and require no lubrication.

Hotchkiss drive is standard on all models except the 3100 Series, the rear springs cushioning thrust.

Driver Comfort Featured

FROM THE standpoint of driver comfort and eye-appeal a major advance has been made in the design of cabs and bodies. Cabs are of welded all-steel construction, driver comfort being improved by increased width, headroom, and leg room. The cab is said to seat three comfortably through an increase in seat width of 8 in. Seats now are of passenger car type with a convenient regulator lever at the side for seat adjustment. Seat cushion and back move together when adjusted, the seat rising with forward adjustment to maintain a good eye level. Seat cushions feature a larger number of softer rate springs, preloaded to reduce bounce.

Visibility is improved by the use of larger windshield glass set solidly in the cab structure, while new window regulators and glass run channels provide quietness and ease of window operation. Safety glass is used throughout.

To further driver comfort Chevrolet provides scoop-type ventilators on the top and left side of the cowl. Optional equipment offers a fresh-air heater and defroster unit to provide comfortable conditions in cold or rain without fogging of glass. This unit is mounted on the right hand side, draws fresh air through a set of louvers in the cowl side. The hot

(TURN TO PAGE 162, PLEASE)

Hear Ye! Hear Ye!

" . . . when a person transports goods of which it is the owner or bailee in its own vehicles as a private carrier in furtherance of its commercial enterprise, it cannot charge and receive compensation which exceeds its cost of engaging in the transportation without violating its status."

—Exceptions to examiner's report filed by the National Tank Truck Carriers, Inc., and the Regular Common Carrier Conference of the American Trucking Associations, Inc., Feb. 10, 1947.

"The expression of principles in the Woitishek case should be reviewed, but not, as the ATA interveners suggest, for the purpose of abandoning the 'primary business' test. Instead, any idea of a separate 'for compensation' test should be abandoned, and the 'primary business' test should be recognized as the only lawful test for determining private carriage."

—National Council of Private Motor Truck Owners Inc., April 10, 1947.

" . . . there can be no so-called for compensation test for application to bring under regulation concerns using trucks privately in furtherance of their commercial enterprises."

—National Industrial Traffic League, May 2, 1947.

Private and For-Hire Groups Before ICC in CRUCIAL CASE

Transportation charge made by Lenoir Chair Co. precipitates issue. An analysis of contentions made in opposing carriers' briefs

by GENE HARDY
CCJ Washington Bureau

PRIVATE VS. FOR-HIRE carriage is an issue that has been kicking around the Capital for more than a decade. Varying opinions have emanated from the Interstate Commerce Commission from time to time.

The battle is raging once again and this time both sides are hopeful that forthcoming ICC decisions in the Lenoir Chair Co. and Schenley Distillers Corp. cases will spell out once and for all what constitutes private carriage under the ICC act.

The surface issues in both cases are generally similar. Both companies have claimed private carrier status in asking for dismissal of their contract carrier applications. The issues in the Lenoir case, however, are more clearly defined and are not clouded by other legal points as is the case in the Schenley application.

"Primary Business" Test

THE PRIVATE carrier interests maintain that the "primary business" test established by the Commission in an earlier case (Woitishek Common Carrier Application) and upheld by the examiner in the Lenoir case should be the sole determining factor in fixing the status of private carriers. Actually, the Commission in the Woitishek case held that a person may receive compensation for transportation as a private carrier and still retain his status if the transportation was only incidental to some other form of commercial enterprise.

Vs. "Compensation" Test

THE FOR-HIRE interests have intervened in the Lenoir case asking the ICC to re-examine the principles laid down in the Woitishek case and set aside the "primary business" test, applying in future cases the "compensation" test, if the compensation exceeds the cost of engaging in the transportation.

The examiner's report in the Lenoir case, dated Dec. 23, 1946, upheld the private carriers in applying the "primary business" test. In the Schenley case the examiners applied the "compensation" test and recommended that the company be given the status of contract carrier and that its application for contract carrier privileges be denied and that the operation be discontinued.

Application of the yardstick used by the examiners in the Schenley case would place private motor truck operators under for-hire government regulations and drive thousands of vehicles off the roads.

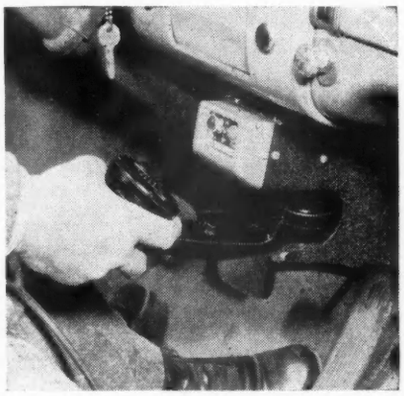
In the Lenoir case, the company found itself in difficulties in the state of Florida arising from its status as a private carrier. Accordingly, on March 25, 1946, the company asked for a permit authorizing continuance of operation as a contract carrier of furniture and materials, supplies and

(TURN TO PAGE 168, PLEASE)

Leased mobile telephone service permits Davidson Supervisors to contact their terminals or any other telephone

Mobile telephone installation in trunk compartment of supervisor's car is owned and serviced by telephone company

Close-up of mobile telephone instrument conveniently located on the dash



Mobile Telephone

Helps Fleet Maintain Schedules

Permits close control over vehicle movement, keeps supervisors in contact with terminals

by ***W. A. DUFFY***
Director, Department of Safety & Personnel,
The Davidson Transfer & Storage Co., Baltimore, Md.

ON MONDAY, April 7, 1947, at about 2 a.m., our road supervisor came upon one of our units disabled on U. S. Route 1, about five miles north of Kennett Square, Pa. He questioned the chauffeur, found he had engine trouble and could not proceed.

Our supervisor stepped into his car, parked in front of the truck, and contacted our shop in Baltimore by mobile telephone. After the symptoms were explained, the night superintendent diagnosed the trouble and instructed the road supervisor to contact a certain outpost shop—one that could best make the repair.

The road supervisor then called the recommended outpost shop, repeated our night superintendent's diagnosis, and a mechanic was dispatched promptly. The mechanic arrived 30 minutes later. The repair required about 30 minutes, after which the truck was on its way. The road supervisor then called Baltimore, reported that the repair was made and that the truck was on its way.

The elapsed time of the foregoing incident was a little over one hour.

This incident might have been very different had it not been for the mobile telephone unit in the road supervisor's car. Previously, the chauffeur would have had to depend

(TURN TO PAGE 150, PLEASE)

CCJ QUIZ

by ROBERT F. BAHL

When Henry Ford died on April 7, the automotive industry lost its most colorful figure. The things he did and the words he said made history. See how much of that history you you know by answering these 10 questions. A score of 70 is fair; 80 is good; 90 is very good and 100 perfect. The answers are on page 75.

1.

How close can you come to Ford's age at the time he built his first automobile?

a. 19 years.
b. 24 years.
c. 29 years.
d. 35 years.

2.

Did Henry Ford actually make the statement—"Any customer can have a car painted any color he wants so long as it is black"?

a. Yes.
b. No.

3.

Ford is often credited with originating the assembly line with its moving belt, but he actually got the idea from.....

a. His greatest rival, General Motors.
b. Chicago's meat packers.
c. Egyptian pyramid builders.
d. The shoe-making industry.

4.

Ford may have built the Model T, but it is just as true that the Model T built Ford. Can you tell us how many Model T's were built.

a. 3 million.
b. 7 million.
c. 15 million.
d. 32 million.

5.

Old cronies, they called them . . . the four pioneers who took vagabond trips together and vacationed in the wilds of nature—Henry Ford, Thomas A. Edison, John Burroughs, and the fourth was . . .

a. John D. Rockefeller
b. Harvey S. Firestone
c. J. Pierpont Morgan
d. Andrew Mellon.

JOBSERVATIONS

by Buster Rothman

Some men blaze a way: others blaze away.

★ ★ ★

A wise man is one who "noes" a lot.

★ ★ ★

When you are big enough to take credit for yourself, you don't need it.

★ ★ ★

The postage stamps' usefulness is its ability to stick to one thing until it gets there.

★ ★ ★

Confucius say: "Salesman who cover chair instead of territory always on bottom."

★ ★ ★

To err is human, but when the eraser wears out before the pencil, beware.

★ ★ ★

Brains, unlike cars, are worth more when they are used.

★ ★ ★

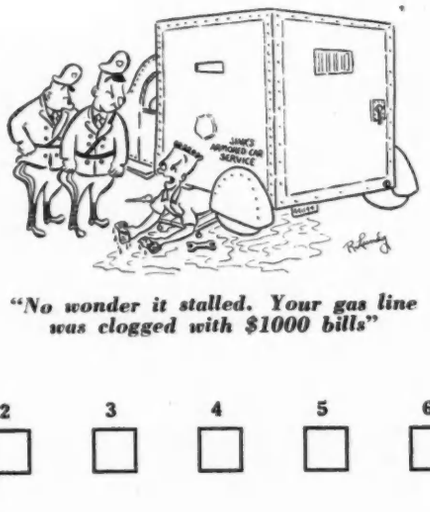
If you want your dreams to come true, wake up.

★ ★ ★

The right way to kill time is to work it to death.

★ ★ ★

The man who wakes up and finds himself successful hasn't been asleep.



"No wonder it stalled. Your gas line was clogged with $1000 bills"

6.

You won't get a Hollywood trophy but just 10 points added to your score for telling us about "Oscar II."

a. It was old Henry Ford's favorite nickname for his grandson, young Henry Ford, now president of Ford Motor Co.
b. It was the name given to Ford's first "model T."
c. It was the car in which Ford broke the world's speed record at Grosse Point.
d. It was Fords' "peace ship," in which he sailed to Europe to try to end World War I.

7.

So much was Henry Ford a part of America that it is hard to realize that he had any ancestry at all . . . yet his father was an immigrant from—

a. Holland.
b. Ireland.
c. Sweden
d. Germany.

8.

Had the "Ford-for-President" boom materialized, he would have been president instead of . . .

a. Wilson.
b. Harding
c. Coolidge.
d. Hoover.

9.

Take your choice—and give us Henry Ford's choice of these four—

a. A cool glass of beer.
b. A Havana cigar.
c. A pack of cigarettes.
d. A bunch of raw carrots.

10.

$5 a day would hardly be considered a decent wage now, but when Ford inaugurated it, it was an unheard-of figure. The time was

a. 1909.
b. 1914.
c. 1919.
d. 1922.

★ SCORE CARD

1	2	3	4	5	6	7	8	9	10
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Quiz Answers

CCJ Quiz on Page 72

1. c. Ford was 29 when he first drove his car in the spring of 1893.

2. a. Henry Ford himself says he did. In a book of his own authorship, "My Life and Work," copyrighted in 1922, Ford admits that he made the remark in 1909 along with the announcement that his company would henceforth build only one model, that being the model T.

3. b. Ford started experimenting with the assembly line about April 1, 1913, first using it on assemblying the flywheel magneto. The idea came from the overhead trolley that the Chicago packers used in dressing beef.

4. c. 15 million Model T's were turned out of Ford plants before the model was suddenly and dramatically discontinued in 1927 to make way for the model A.

5. b. Firestone, of rubber tire fame, one of Ford's closest friends. The four went on motor caravans together and slept in tents.

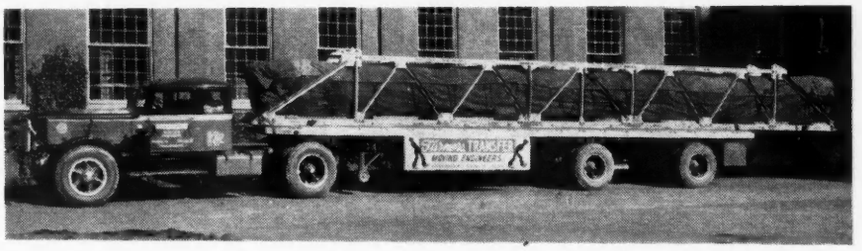
6. d. In 1915, Ford charted the Danish ship "Oscar II" and sailed to Europe in an attempt to persuade the warring nations to call off the war and get "the boys out of the trenches by Christmas." The trip cost $400,000 but was a complete failure.

7. b. Ireland. His father, William Ford, was of English descent, but was born near Cork, Ireland, whence the family emigrated to America in 1847. Henry Fords' mother was of Dutch descent.

8. c. In 1922, Ford, was caught up in the greatest spontaneous presidential boom in modern times . . . but the boom ceased suddenly in the fall of 1923. Coolidge was the next President.

9. d. You can be sure that Ford would have selected the carrots. He was a teetotaler, and as for smoking, he once said, "If you will study the history of almost any criminal, you will find he is an inveterate cigaret smoker." He had a fetish, though, for raw carrots and soybeans.

10. b. Ford made the historic announcement of a minimum wage of $5 for an 8-hr day in January, 1914. The prevailing wage at the time was $2.40.

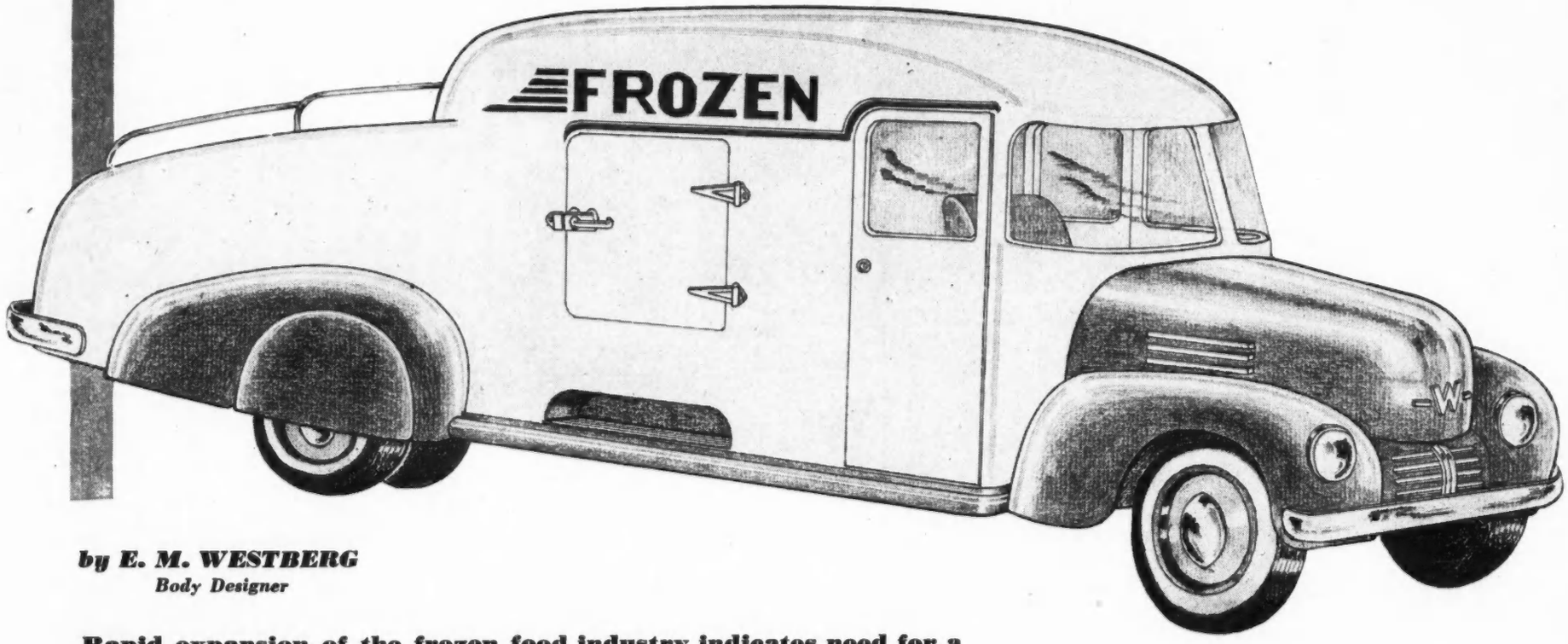


Riding on a special permit wherever it goes, this Hall-Scott powered Autocar hauls textile machinery as far as Mexico City. The Brown-built trailer features a self-steering Hoobler (Union Metal Mfg. Co.) boggie. Despite an overall length of 70 ft. and a g.v.w. of 72,000 lb. it can turn from one 20-ft. street into another of the same width according to owner Guy Turner of Greensboro

CCJ CUSTOM BODY SERIES

DESIGN NO. 6 . . FROZEN FOOD UTILITY BODY

To insure a custom design for your vocation, supply answers to questionnaire on Page 43, June, 1946, CCJ



by E. M. WESTBERG
Body Designer

Rapid expansion of the frozen food industry indicates need for a special utility delivery combination for local wholesale service

special utility delivery combination for local wholesale service

Starting with the June, 1946, issue, Commercial Car Journal resumed a prewar reader service on vocational body design which fleet operators can put to profitable use in improving the appearance of their fleets, increasing payload and efficiency in cargo handling.

In the past, Mr. Westberg has designed numerous bodies for CCJ readers. He is well known among eastern body builders and, having worked in body shops, knows the practical problems of body building.

While these designs are copyrighted, arrangements can be made with the designer for procuring detailed construction drawings and consultation on specific problems. If such service is desired, write to Editor, Commercial Car Journal, 56th & Chestnut, Phila, Pa.

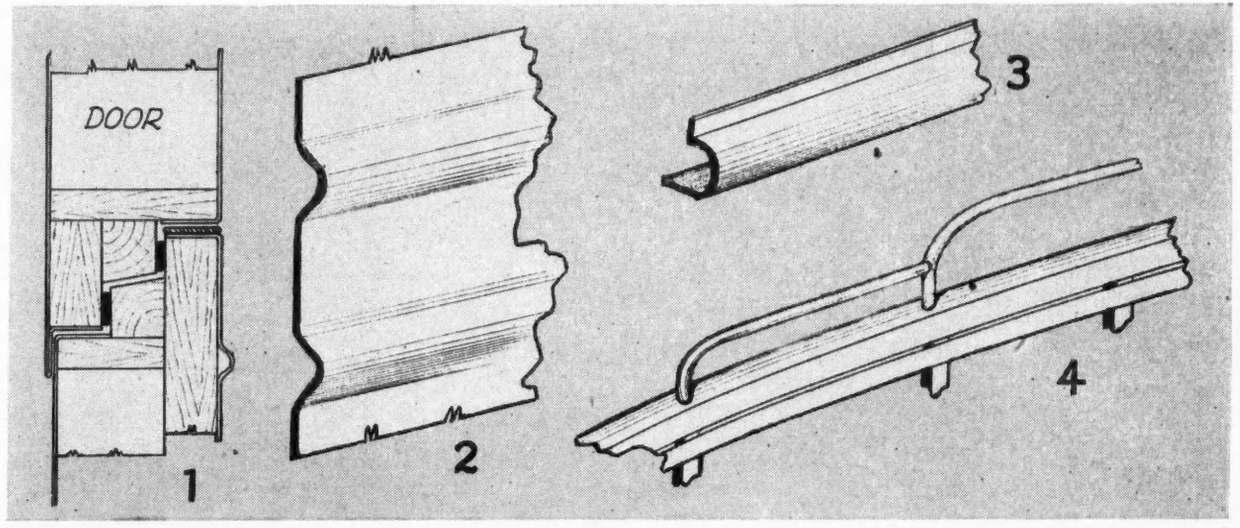
THE RAPIDLY EXPANDING frozen food industry is showing its effect on truck transportation by increasing the demand for "reefers." Bigger and better vehicles for this service are becoming common on our highways.

However, a definite need for special frozen food utility delivery trucks is indicated for local wholesale service. The design shown on these pages should adequately fill the need.

The design suggested is a combination low-temperature frozen food delivery and utility, or special delivery unit, combining operational features which should keep it busy every hour of the working day, and a streamlined eye-appeal of considerable advertising value. The forward portion of the body is designed to carry an adequate load of frozen food for store-to-store delivery, while the rear end is intended to carry show cases, outdoor signs, and general advertising matter.

This design lends itself well to two different body sizes, of either 9 ft. 6 in. or 12 ft. 0 in. overall length, with two sizes of frozen food compartment of 50 x 58 x 35 in. or 50 x 68 x 35 in.

The body, as shown, is well adapted to hardwood frame construction, rigid or non-rigid types of insulation, steel panels and galvanized lining. Any of the accepted types of refrigeration methods, such as dry ice or cold hold plates, can be used.

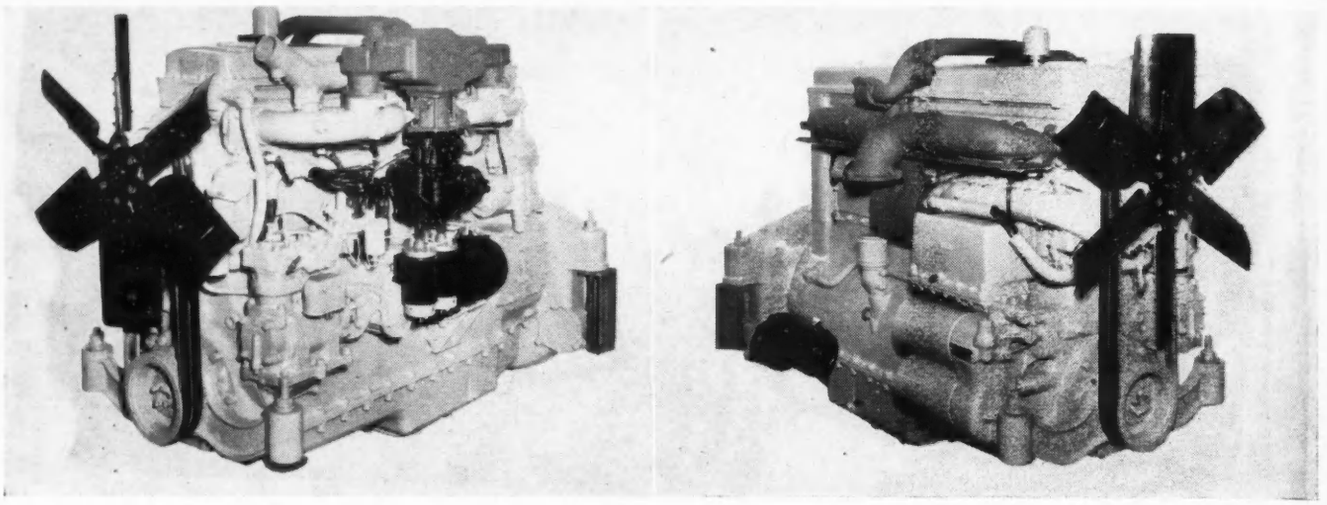


No. 1. Cross section showing construction of interlocking door. No. 2 Corrugated galvanized body lining No. 3. Oversize rub rail. No. 4. Chrome-plated hand rails improve appearance and increase deck utility for carrying packages

Special Features

SPECIAL features embodied in this design, some of which are illustrated, include oversized door for convenient loading and unloading operations to suit variable sized packages, large rub rail step for operating convenience, flexible sectional floor racks, corrugated galvanized lining to assure sufficient cold air circulation inside the body (particularly where a great number of square-type packages are used), a three-step, two-gasket door with heavy metal tread plate to assure air tightness, oval rub rail of good appearance, wrap-around rear bumpers, streamlined chrome-plated rails for appearance and utility when used to tie down load, and rear tailboard for additional load space.

For a unit with full streamlined appearance, the rear deck can be fully enclosed with a rear deck lid, similar to a passenger car, can be provided for access inside.



Left and right views of Hall-Scott model 400. Smaller models are similar and all are available for gasoline or butane fuel

HALL-SCOTT

Truck Engines Pack Powerful Punch

Three engines in 400 series range up to 1090 cu. in. displacement and 276 net hp.

JUST BEFORE World War II, the Hall-Scott Division of ACF-Brill Motors Co., Berkeley, Cal., produced a small number of its big 6-cylinder 400 Series engines, a radically modified truck version of its famous Defender marine engine. During the war years civilian output was practically halted and production concentrated on the same engine, but known as the 440 model, especially adapted for use in the Army's giant tank retrievers.

Early last year commercial production was resumed and by year's end about 350 were in use, principally on the West Coast. Production for 1947 is expected to reach the 1000 mark and already a number of leading truck manufacturers have adopted the engines as optional or even standard equipment where requirements dictate the need for the exceptional performance that these engines can deliver. Parts distribution has been set up on a nation-wide scale, the company has reported.

As will be seen in the accompanying condensed specification table, the three current production models are really big, ranging from 855 to 1090 cu. in. displacement and from 223 to 276 net hp. @ from 2000 to 2200 r.p.m. All three are available for use with either gasoline or butane-propane-natural gas fuels. The model 400 is reputed to have the highest developed horsepower rating of any truck engine in current production.

The three principal design features of all models are as follows:

1. Overhead valves and overhead camshaft permitting a perfectly-balanced, semi-spherical, machined combustion chamber. The camshaft is driven by a chain from the accessory shaft which, in turn, is gear driven from the *rear* of the crankshaft just ahead of the flywheel. This feature is said to virtually eliminate torsional vibration on the accessory drive chain and to be unique in the industry.

2. Twin ignition available either with 12-point distributor for straight battery operation or with battery and magneto system.

3. A replaceable cylinder block is fitted between the cylinder head and

(TURN TO PAGE 166, PLEASE)

CONDENSED SPECIFICATIONS

400 Series, Hall-Scott Engines
(Gasoline Models, *

Model	Bore & Stroke (in inches)	Displacement (in cu. inches)	Comp. Ratio	Horsepower (bare engine)	Horsepower (with access.)	Maximum Torque (lb. ft.)	Approx. Weight (lb.)
400	5¾ x 7	1090	5.7	295 @ 2000	276 @ 2000	940 @ 1350	2200
480	5¾ x 6	935	5.7	275 @ 2200	252 @ 2200	800 @ 1250	2200
470	5½ x 6	855	5.25	245 @ 2200	223 @ 2200	660 @ 1400	2200

* With Butane fuel, horsepower and torque output average 15% higher.

THE NEW EXIDE BATTERIES

Greater power . . . improved performance . . . low cost per mile of operation . . .

Inside and out, the New Exide Batteries are *completely* new . . . in design, construction, performance. They have many improvements and added features, developments that have grown from extensive engineering research and valuable wartime experience on automotive equipment of every kind, in every type of service, in all climates.

For maximum dependability, low cost per mile of operation, long-life and ease of maintenance, you can always count on Exide Batteries.

IMPORTANT NEW FEATURES

- Heavy, over-size plates.
- Greater capacity.
- Self-cleaning, non-spitting vent plugs.
- Double insulation between plates.
- "Bull's Eye" electrolyte leveling device.
- Larger, heavier inter-cell connectors.
- Heavy, hard rubber container.
- Positive cover seals.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

New Truck Registrations by Makes and States*
March and Three Months of 1947

STATE		Auto-car	Brock-way	Chev-rolet	Dia-mond T	Divco	Dodge	Fed-eral	Ford	FWD	GMC	Inter-nat-ional	Mack	Osh-kosh	Reo	Ster-ling	Studе-baker	Ward La France	White	Willys	All Others	Total
Alabama	March	2	.....	560	8	.....	212	6	412	.....	114	169	11	.....	29	.....	52	.....	17	96	8	1,699
	3 Mos.	2	.....	1,413	25	8	573	23	1,131	1	297	487	23	.....	88	.....	140	.....	44	237	23	4,515
Arizona	March	1	.....	92	2	.....	41	3	81	.....	26	21	.....	.....	12	.....	20	.....	6	31	4	340
	3 Mos.	4	.....	250	4	.....	105	8	216	.....	67	59	1	.....	30	2	38	.....	7	52	10	853
Arkansas	March	.....	.....	195	1	.....	72	.....	196	.....	48	38	.....	.....	5	.....	28	.....	4	36	1	624
	3 Mos.	.....	.....	579	10	.....	209	5	541	.....	111	136	3	.....	9	.....	69	.....	12	71	3	1,758
California	March	32	2	1496	37	34	682	11	1224	20	509	657	12	.....	81	12	356	.....	32	171	75	5,423
	3 Mos.	90	16	3808	100	72	1563	32	2621	64	1168	1402	33	.....	170	20	789	1	111	409	191	12,458
Colorado	March	3	.....	250	18	3	107	6	216	22	54	102	2	.....	11	.....	31	.....	.....	35	11	871
	3 Mos.	5	.....	573	35	11	276	12	622	33	139	272	5	.....	24	.....	100	.....	8	90	14	2,219
Connecticut	March	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	3 Mos.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Delaware	March	3	2	63	2	1	31	1	50	.....	17	29	1	.....	1	.....	11	.....	4	5	2	223
	3 Mos.	5	5	193	4	1	115	1	153	1	49	80	2	.....	5	.....	30	.....	10	21	2	677
Dist. of Col.	March	1	5	78	5	7	62	3	88	.....	29	55	11	.....	8	.....	15	.....	.....	1	4	372
	3 Mos.	1	7	204	8	32	140	8	187	.....	66	94	16	.....	12	.....	27	.....	10	3	5	817
Florida	March	4	.....	300	7	.....	108	7	174	4	68	94	11	.....	15	.....	46	.....	16	40	6	900
	3 Mos.	11	.....	1,459	33	3	523	28	1,188	19	244	470	56	.....	62	.....	155	.....	57	188	19	4,515
Georgia	March	.....	.....	298	7	3	129	4	304	.....	74	101	9	.....	19	.....	36	.....	27	29	2	1,042
	3 Mos.	3	1	813	23	4	411	8	916	.....	202	283	24	.....	50	.....	104	.....	57	91	7	2,997
Idaho	March	.....	.....	153	3	1	59	2	118	.....	30	69	.....	.....	5	1	26	.....	1	29	12	509
	3 Mos.	.....	.....	365	9	1	120	5	217	.....	66	138	1	.....	19	1	53	.....	2	49	14	1,060
Illinois	March	39	5	1,416	110	29	722	29	1,162	6	367	615	31	.....	82	.....	231	1	63	138	42	5,088
	3 Mos.	83	28	4,108	308	88	2,074	63	2,956	7	861	1,751	74	.....	257	3	661	1	175	379	132	14,007
Indiana	March	8	7	531	46	21	335	10	499	.....	157	299	16	.....	52	.....	155	.....	22	57	23	2,236
	3 Mos.	20	54	1,538	112	56	985	36	1,360	1	459	910	56	.....	142	.....	464	.....	95	218	71	6,577
Iowa	March	.....	1	600	23	6	243	7	415	.....	81	235	16	.....	28	.....	91	.....	13	127	8	1,884
	3 Mos.	.....	1	1,418	62	10	665	13	1,213	3	212	654	38	.....	89	.....	218	1	30	251	23	4,901
Kansas	March	3	.....	988	30	14	274	21	649	.....	128	286	2	.....	28	.....	159	.....	15	22	14	2,631
	3 Mos.	3	1	1,572	51	16	448	33	1,069	.....	213	511	3	.....	53	.....	290	.....	39	72	23	4,387
Kentucky	March	.....	.....	363	10	3	172	4	264	.....	64	187	5	.....	24	.....	58	.....	13	67	6	1,240
	3 Mos.	3	.....	854	25	4	421	13	692	.....	168	444	16	.....	53	.....	130	.....	23	198	13	3,067
Louisiana	March	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	3 Mos.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maine	March	.....	4	111	1	.....	83	5	141	.....	46	67	14	.....	8	.....	18	.....	6	11	4	519
	3 Mos.	8	5	178	1	1	140	8	298	2	85	121	22	2	13	.....	52	.....	27	23	7	993
Maryland	March	9	7	296	4	6	145	10	162	.....	66	112	7	.....	26	.....	41	1	13	26	3	934
	3 Mos.	27	28	890	13	24	449	24	597	.....	200	352	38	.....	77	.....	109	7	51	74	15	2,973
Massachusetts	March	4	5	101	9	4	71	2	140	.....	27	48	6	.....	7	1	13	.....	8	25	3	472
	3 Mos.	8	9	263	21	29	169	5	328	.....	59	119	20	.....	27	4	29	.....	20	85	5	1,200
Michigan	March	7	4	462	25	23	385	34	560	1	144	184	5	.....	55	.....	80	4	16	74	28	2,091
	3 Mos.	17	11	2,085	92	91	1,354	95	2,034	1	460	622	27	.....	236	.....	325	8	35	321	83	7,897
Minnesota	March	3	.....	502	28	8	308	15	440	1	104	293	8	.....	18	.....	112	2	29	55	13	1,939
	3 Mos.	6	2	1,222	63	25	726	40	1,046	14	218	642	26	2	39	.....	206	6	64	101	20	4,468
Mississippi	March	1	.....	549	2	.....	150	4	340	.....	80	111	3	.....	16	.....	57	.....	10	106	3	1,432
	3 Mos.	1	.....	1,448	16	2	467	11	1,016	.....	192	353	9	.....	34	.....	151	.....	34	206	6	3,948
Missouri	March	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	3 Mos.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana	March	.....	.....	208	3	3	107	1	168	.....	38	72	.....	.....	8	.....	48	.....	4	78	6	744
	3 Mos.	.....	.....	490	20	3	270	4	395	1	88	215	.....	.....	15	.....	101	.....	11	138	8	1,759
Nebraska	March	3	.....	344	13	.....	154	2	239	.....	43	162	16	.....	21	.....	65	.....	20	61	4	1,147
	3 Mos.	3	.....	832	63	.....	396	13	748	4	144	453	39	.....	46	.....	157	.....	55	179	7	3,139
Nevada	March	1	.....	24	2	.....	15	.....	22	.....	7	20	.....	.....	1	.....	3	.....	.....	5	.....	100
	3 Mos.	2	.....	71	3	.....	35	.....	68	1	23	46	.....	.....	1	.....	21	.....	1	19	5	296
New Hampshire	March	.....	.....	6	.....	.....	6	.....	7	.....	3	1	.....	.....	.....	.....	3	.....	.....	7	.....	33
	3 Mos.	3	2	138	2	.....	78	1	115	.....	34	55	6	.....	10	1	16	.....	6	52	3	522
New Jersey	March	36	27	401	17	24	212	17	318	.....	97	157	48	.....	15	.....	60	4	29	34	18	1,514
	3 Mos.	101	108	1,061	61	44	615	37	897	.....	316	541	139	.....	36	.....	171	16	90	108	45	4,384
New Mexico	March	.....	.....	146	7	.....	68	2	77	.....	38	44	4	.....	.....	.....	23	.....	4	16	1	430
	3 Mos.	.....	.....	332	13	.....	128	2	194	4	75	91	7	.....	5	.....	50	1	8	31	4	945
New York	March	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	3 Mos.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Carolina	March	7	.....	828	4	5	192	23	419	5	60	139	20	.....	28	.....	61	.....	27	71	10	1,899
	3 Mos.	16	6	1,691	21	8	507	36	1,039	6	137	368	65	.....	102	.....	198	.....	87	171	24	4,482
North Dakota	March	.....	.....	85	4	.....	52	.....	89	1	14	58	.....	.....	6	.....	24	.....	.....	13	1	347
	3 Mos.	2	.....	144	5	.....	81	.....	134	1	23	86	.....	.....	8	.....	37	.....	2	46	2	571
Ohio	March	34	12	899	51	50	682	40	904	5	314	553	73	1	96	.....	205	3	145	14	53	4,134
	3 Mos.	98	28	2,545	128	116	1,878	104	2,473	14	738	1,435	172	1	237	.....	486	6	254	313	111	11,137
Oklahoma	March	.....	.....	444	3	.....	162	7	303	2	57	158	4	.....	12	.....	37	.....	8	29	6	1,232
	3 Mos.	.....	.....	1,197	8	5	602	12	985	3	196	492	17	.....	40	.....	174	.....	40	123	11	3,905
Oregon	March	3	.....	488	48	6	268	23	365	4	134	242	6	.....	21	2	125	.....	25	98	22	1,880
	3 Mos.	5	.....	898	65	14	443	31	595	4	237	371	8	.....	32	8	210	.....	36	181	40	3,178
Pennsylvania	March	47	92	1,156	70	13	811	45	987	23	326	702	98	.....	93	9	225	7	136	142	54	5,034
	3 Mos.	179	226	2,796	172	45	2,149	110	2,463	27	755	1,668	217	17	240	28	527	27	313	397	89	12,443
Rhode Island	March	2	.....	63	4	4	26	.....	53	.....	21	25	4	.....	1	.....	15	.....	2	6	5	231
	3 Mos.	31	1	259	13	22	104	2	179	2	61	77	15	.....	3	2	32	.....	13	22	9	847
South Carolina	March	1	.....	366	2	.....	140	3	284	.....	50	73	6	.....	12	.....	37	.....	12	48	10	1,044
	3 Mos.	2	.....	900	12	.....	424	6	769	.....	125	211	17	.....	63	.....	107	.....	40	161	23	2,860
South Dakota	March	3	.....	83	3	.....	64	.....	114	.....	21	66	4	.....	8	.....	23	.....	3	30	.....	422
	3 Mos.	3	.....	236	15	.....	205	3	278	5	63	163	6	.....	20	.....	50	.....	6	80	2	1,135
Tennessee	March	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	3 Mos.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas	March	.....	1	1,424	13	10	630	14	968	.....	233	459	33	.....	44	.....	204	.....	51	146	14	4,244
	3 Mos.	.....	3	3,752	72	32	1,844	30	3,089	2	676	1,396	88	1	147	.....	501	1	202	473	48	12,357
Utah	March	.....	.....	131	5	4	48	1	137	3	31	77	5	.....	3	1	31	.....	7	24	14	522
	3 Mos.	.....	.....	353	12	12	148	10	330	5	97	150	5	.....	3	1	74	.....	11	44	17	1,272
Vermont	March	.....	1	109	6	3	82	3	103	1	10	50	15	1	18	1	10	3	2	66	4	488
	3 Mos.	2	8	222	9	3	155	8	222	4	41	119	20	2	38	2	22	4	7	128	6	1,022
Virginia	March	10	9	549	15	6	271	15	528	1	121	187	16	.....	34	.....	85	.....	25	65	15	1,952
	3 Mos.	42	21	1,524	43	15	668	30	1,439	9	285	485	38	.....	88	.....	188	.....	67	192	47	5,181
Washington	March	2	.....	295	16	3	156	1	316	3	93	124	7	.....	19	4	75	.....	3	59	14	1,199
	3 Mos.	4	1	921	47	14	470	3	855	6	257	365	14	.....	54	6	227	.....	12	130	35	3,421
West Virginia	March	.....	2	178	6	4	152	9	193	1	41	142	2	.....	17	.....	37	2	9	59	5	859
	3 Mos.	8	22	606	24	10	451	23	550	27	176	286	5	.....	46	.....	104	2	29	183	14	2,564
Wisconsin	March	12	.....	537	28	6	222	7	406	14	101	194	6	6	32	7	68	.....	33	68	16	1,763
	3 Mos.	12	.....	1,338	73	28	550	21	911	44	259	535	20	18	91	8	158	2	95	149	34	4,346
Wyoming	March	.....	.....	106	1	1	35	.....	67	.....	12	42	1	.....	1	.....	17	1	4	23	3	314
	3 Mos.	.....	.....	231	10	2	93	2	198	2	27	104	3	.....	6	.....	40	2	12	64	5	799
Total	March	279	186	18272	699	305	8948	397	14702	117	4098	7517	536	8	1000	38	3117	28	864	2343	547	63,999
	3 Mos.	1123	980	53375	2169	954	27393	1135	43854	365	11535	22079	1727	61	3152	107	8603	147	2756	7256	1457	190,220

* Data from R. L. Polk & Co. March includes reports from only 44 states. The three months' totals include complete reports for January and February and the partial returns for March.

They're delivering gasoline and saving it too in this rugged new Studebaker truck

IF you want to cut costs, get a Studebaker truck. Good news is sure to greet you every time you tally up your miles per gallon.

Better still, you find out that gasoline isn't all you save.

Your Studebaker truck is solidly built. That means just ordinary good care keeps it free from costly lay-offs for repairs.

The spotlight is on Studebaker

Take a good look at the heavy-duty-model Studebaker pictured above.

There's one good reason why you find Studebaker a spotlight name today throughout the truck world.

This powerful, sturdy Studebaker is the 1947 result of lessons learned in four years of wartime truck production.

It's built in the same factories, with the same tools, by the same craftsmen that turned out over 200,000 Studebaker military vehicles.

Powered by Hy-Mileage engine

You get more than low-cost power in a heavy-duty-model Studebaker.

Its brilliant Hy-Mileage engine comes complete with automatic choke, automatic spark control, adjustable octane selector, oil bath air cleaner and oil filter.

This truck is a driver's dream of riding comfort and handling ease. Its roomy cab alone has seven modern "extras" that cost you nothing extra.

See this and the other Studebaker truck models at a nearby dealer's now.

You may have to wait a certain amount of time to get a new Studebaker. But when it arrives you're sure to be ahead plenty.

Studebaker

Builder of trucks you can trust

The Studebaker Corp'n, South Bend 27, Indiana, U. S. A.

DETROIT DISPATCH

Steel Shortage Trims Output
ICC Wants Rear Bumpers
. . . Asks Two Safety Features

Parts Supply Catching Up
Chevrolet Defers Light Car
Drivers Seek Good Will

Steel Shortage Trims Output

The critical sheet steel shortage that cropped out in the automotive industry in May trimmed truck output to possibly the lowest point this year. While the truck makers are not hit as badly as the passenger car builders they are feeling the effects and as long as the shortage remains critical, prospects for any worthwhile production of panel delivery trucks are pretty well blacked out. There does not seem to be any optimism in Detroit that the sheet steel shortage will be licked until late this snmmer or early fall. Nonetheless, truck production is expected to get back to previous levels of well over 100,000 units a month which is the highest rate in history.

ICC Wants Rear Bumpers

ICC apparently is not willing to accept without a fight the recommendation of the SAE Bumper Standardization Committee that rear truck bumpers are impractical. A meeting is being held this month in Washington with the manufacturers to thrash out the question. While manufacturers are opposed to a rear bumper installation, the problem is a delicate one for them from a public standpoint since they easily could be put in a position of opposing a safety measure. However, they feel that the relatively few accidents caused by motorists running under the rear end of a truck do not merit a design change that not only would be more costly but also would present some very serious operating difficulties for the fleet operator. Principal objection is that a rear bumper on a truck could seriously interfere with backing up to loading platforms. Also, truck design varies so greatly that any type of standardization for height would be almost an impossibility. It is thought in Detroit, however, that because of the eminence of the SAE Committee members, ICC will eventually accept the committee's report even though it proves to be adverse to the commission's desires.

. . . Asks Two Safety Features

Two items which ICC would like to have incorporated as safety features in trucks are laminated safety glass in truck cab windows and certain revisions in sleeper cab requirements. The truck industry apparently is ready to go along with any practical changes on these two proposals. Some of the things ICC would like in a sleeper berth would be a more ready exit, adequate sleeping equipment such as springs and mattresses, some means of communication between the driver and the occupant of the berth, prohibition of sleeping quarters in cargo space by requiring that the berth be in the cab or securely attached to it, and adequate ventilation with at least six inches between the berth and the exhaust system. While these appear likely of adoption, public hearings are to be held and the proposed changes probably are at least a year away

by ***LEN WESTRATE***
CCJ Detroit News Editor

Parts Supply Catching Up

Automotive replacement parts makers report that buyers are becoming definitely price conscious. The industry has tremendous capacity and, while the demand has been great and continues so, there are already some evidences of discount cutting in certain lines. Jobbers also are showing an inclination to buy in smaller quantities in anticipation of a possible price cut. Some items such as piston rings, bearings, and cork gaskets are pretty well in balance with demand. Worst shortages still are in sheet metal parts and those requring gray iron castings.

Chevrolet Defers Light Car

General Motors again has deferred for the third time its Chevrolet light car program. The company says that present shortages of materials and the great demand for its current cars makes it unwise to divert materials to a new product at this time. Prior to the official announcement, it had been reported that the project definitely was out the window and some reports still persist that it will not be revived. About the only supplemental evidence is that the manufacturing staff which was kept intact after the first two deferments has been assigned to other divisions, at least in part. A source close to GM says that the car could be built for about $200 under the present Chevrolet. It may be, however, that the corporation does not consider that enough differential to warrant the investment of an estimated $100 million. At any rate, the design is known to be pretty well set and the car is reported to be considerably smaller overall with advanced styling and certain engineering improvements not found on current models. If and when the project will be revived is in the realm of pure speculation.

Drivers Seek Good Will

While it usually is the fleet operator who is concerned about public opinion of truck drivers, the drivers themselves in Cincinnati have begun a campaign to better their own stand in the public's eyes. The present campaign, which is to run until September, started last fall when the business representative of the AFL Teamsters' Union in Cincinnati wrote to the local press decrying the general ridicule and humorous contempt which cartoonists and movie producers have habitually been using to slur the truck driving profession. As a follow up, the Local has set September of this year as Truck Drivers' Month and has inaugurated a full scale campaign to sell the local public on the merits of the truck driver as a useful citizen and workman and an important economic cog in the industrial machine.

Lincoln to Swap "12" for "8"

It seems to be pretty well established that Lincoln will go to a V-8 engine to replace the present "12", probably in its 1948 models. The company is known to have done considerable development work on a V-8, which is said to be smaller than the present 12-cylinder engine but to have more horsepower.

Willys Scraps Body Plans

Willys-Overland has scrapped the body design of the passenger car which it revealed last year as its postwar model. The company now plans to design a car more in line with the modern styling which all other manufacturers are adopting.

For Oil Control, also...

NOT 2...

NOT 6...

but 26 basic designs

OF SEALED POWER PISTON RINGS

including the most efficient sectional steel oil ring ever built —the MD-50

OIL CONTROL is necessary to balanced performance in piston rings. There can't be any question of that. But equally important are blow-by control, low friction, and minimum wear. It takes ALL FOUR to achieve the BALANCED PERFORMANCE that means a good job. And you get all four when you use Sealed Power Individually Engineered Ring Sets, made up from twenty-six (26) basic designs of piston rings. Whatever the make, model, or cylinder wear condition, there is a Sealed Power Set specifically engineered to do the best possible job. Sealed Power has been refining these sets for eight years, has been producing rings for car, truck and engine builders 36 years. For best results, re-power with Sealed Power motor parts. Sold by leading distributors. Sealed Power Corporation, Muskegon, Michigan, and Stratford, Ontario.

Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves, Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts

One of the 26 basic rings is the famous MD-50—the finest sectional steel oil ring ever built. The MD-50 has a cast iron spacer with an exclusive tapered channel design which assures better oil drainage and prevents clogging.

INDIVIDUALLY ENGINEERED

SEALED POWER PISTON RINGS

BEST IN NEW TRUCKS! ★ BEST IN OLD TRUCKS!

Keep your War Bonds!
Get $4 for $3!

INTRODUCING...

. . . THOMAS H. STAMBAUGH as sales manager of the aftermarket division, Monroe Auto Equipment Co. He was formerly with Hudson Motor Car Co.

. . . ROBERT L. MILLER, who has been appointed district sales manager for all The Heil Co. products in the central states of Iowa, Missouri, Nebraska, Kansas and Colorado.

. . . EDWARD COWAN, JR., as Chevrolet zone manager at Norwood, Ohio. Formerly city manager at Detroit, he is succeeded there by F. W. WIELAND

. . . RALPH H. HILSINGER as Reo branch manager at New Haven, Conn. Since 1941 he has been with U-Dry-vit Auto Rental Co., Boston

. . . SAM F. DUPREE, JR., as manager of service parts dept., Spicer Mfg. Div., Dana Corp. D. F. KALISH is now sales manager of the dept.

. . . FRANK R. SOMERS as director of merchandising for Willard Storage Battery Co. He will supervise all replacement sales

. . . J. L. ANDERSON as district manager for Fisk tires in Pittsburgh area. He formerly covered the western New York area

. . . ROBERT R. WALKER as Pittsburgh district manager for U.S. Royal tires. For the past year he has managed commercial sales in the same city

. . . DONALD L. HARBAUGH, appointed field engineer of Lee of Conshohocken

. . . . FRANK H. SIBLEY as St. Louis branch manager for General Tire & Rubber Co. He was formerly assistant manager of the Chicago branch.

and in New York

Your LS *Jim** is

R. S. HEMINGWAY

of Truck and Trailer

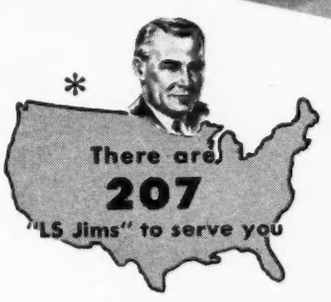
Industries, Inc.

Wherever you do business, there is a neighbor of yours who has a new—unique plan for supplying your truck body requirements. He is an important local manufacturer—he can personally understand your needs and build bodies to meet your specifications. At the same time, he is the only builder who can supply Lindsay Structure Bodies, and give you all the plus advantages of LS mass production.

There are 207 of these men in all parts of the country so that wherever you go there is an "LS Jim" to supply your Lindsay Bodies to the same specifications—or to give you FAST, AUTHORIZED LS SERVICE—on your old bodies.

In New York City, a typical "LS Jim" is R. S. Hemingway of Truck & Trailer Industries, Inc. He has been building bodies for years for the leading fleets in the area, and a modern plant equipped for efficient line production backs his efforts. He has the "know-how" and the means to give you fast, understanding service on all your truck body requirements.

We urge you to call Bob Hemingway, or any of the other 206 "LS Jims"—today—and get acquainted with LS Service. Write for information. **The Lindsay Corporation, 1724 25th Avenue, Melrose Park, Illinois. Sales Offices: Chicago, New York, Atlanta, San Francisco.**



LINDSAY

LS STRUCTURE

U. S. Patents 2017629, 2263510, 2263511
U. S. and Foreign Patents and Patents Pending

Distributors and Builders in All Parts of the Country

WASHINGTON RUNAROUND

ICC Resumes Safety Meetings

The ICC Section of Safety, Bureau of Motor Carriers, opened a series of informal conferences on its proposed revisions to the motor carrier regulations on June 3 and 4 when it met with representatives of national carrier associations. On June 10 and 11 conferences were held with the insurance safety advisory group. The following meetings have also been scheduled: June 24 and 25, manufacturers of trucks, buses, and equipment and accessories, and engineering societies; July 1 and 2, labor representatives; July 10 and 11, state regulatory officials and police departments; July 15 and 16, national associations of bus operators; and July 22 and 23, associations of carriers interested in the transportation of explosives and other dangerous articles. All conferences will be held in Washington.

These informal conferences were set up to provide a sounding board for parties interested in the Section of Safety's May 7 proposed revisions. In addition, the conferences will undoubtedly bring up many points not covered in the original drafts.

The results of the informal conferences will be digested and a new draft prepared which will be sent to all motor carriers before public hearings are opened.

As this issue goes to press, the redraft of Part 7, pertaining to explosives and other dangerous articles, and not included in the May 7 revisions, was nearing completion and scheduled for early issuance.

Army Cites Arctic Needs

The armed services want to be ready to fight the next war in the Arctic if the list of devices and products it wants invented is any clue. Included in the first list of problems thrown out to the nation's technical brains were development of storage batteries for low temperature operation; new types of fuel and lubricants and additives; and some means of solidification of soils to support emergency operations of military vehicles or aircraft.

What is needed in batteries is a new type electric storage battery or improvements in the lead-acid storage battery for efficient service under any climatic conditions within a temperature range of 130°F to —65°F. It is important that under

by GENE HARDY
CCJ Washington Bureau

normal operating requirements the battery will not reflect an appreciable reduction in voltage and efficiency due to low temperatures. Desirable characteristics include long life, durability, light weight, non-spilling and quick recharging without damage to the plates.

New types of fuels, lubricants and fuel and lubricant additives for use in extremely hot and extremely cold climates are also needed.

Information compiled from recent arctic and cold weather maneuvers indicates that considerable work is required in the lubricant and fuel oil field. It is desirable to have a fuel oil that will not separate or disassociate under low temperatures or become solidified as is the tendency with present diesel fuel oil. An ideal diesel fuel oil would be one that would not appreciably lose its physical and chemical characteristics at —65°F. There is also need for lubricating oil which would maintain satisfactory viscosity and have a pour point of approximately —60°F. In the field of solid lubricants development is required to come up with a product which will not solidify at —65°F thereby freezing bearings. Solidification of gasoline in order to improve the packaging, transportation and storage under minimum temperatures at —65°F is also desired. It is necessary that the jelled gasoline be satisfactory for reconversion by application of an unjelling catalyst at a temperature range of 0° to +32°F.

Rapid stabilization of soils by chemical, electrical, mechanical or possibly atomic energy means is also required in emergency military operations prior to the slower and conventional but more permanent building of military roads and airfields. These emergency measures must provide surfaces of great loadbearing capacity due to the increased weight of military equipment. There is a definite need for stabilization of soils to greater depths (2 to 4 feet) than has been previously practical.

Other developments the military is looking for include: low horsepower gas turbines; ultra light-weight gasoline power units; and a light-weight high-speed diesel engine.

These problems are released by the National Inventor's Council, which acts as a clearing house for the Army, Navy and Coast Guard in evaluating replies received from the country's inventors, universities and industrial laboratories. Additional problems will be released at irregular intervals.

Army Specifies Ransom Drive

After extensive tests by Army Ordnance, the Ransom drive system, promoted by the National Inventor's Council, has been deemed ready for application in both military and commercial vehicles. This new system incorporates in multi-wheel drive vehicles an over-running clutch and non-constant velocity universal joint which compensate for difference in travel between front and rear wheels, eliminates "wind-up" and increase steering radius. The Ransom system also allows for disengaging the front wheels of a vehicle when rounding a curve on hard surfaces, lessening the strain on tires and mechanical parts.

This new drive system was installed in an Army Ordnance 4x4¾-ton truck and thoroughly tested at the Aberdeen Proving Grounds. It was shown to be durable and trouble free and is now undergoing further field tests by Army Ground Forces.

In brief, the tests showed that with the Ransom system:

1. The over running clutch prevents any wind-up that can put a strain on mechanical parts or wear on tires.
2. The non-constant velocity universal joint permits a smaller turning circle.
3. Use of the device will increase the overall cost of the vehicle very little, if any.

Since the Army has decided to specify its use in future procurement, it is expected that the device will soon find its way into commercial multi-wheel drive vehicles.

Safety Goal—10,000 Lives

The Action Program group of the President's Highway Safety Conference met in Washington June 18-20. The meeting

(TURN TO PAGE 88, PLEASE)

When it's PISTONS
There's One Best Answer

"Allied"—for Accuracy
—for Performance
—for Profit

● So vital are pistons to the performance, power and economy of a motor, that you can't afford to take chances on improperly designed, or poorly manufactured pistons. Allied Pistons, and all related parts, are accurately built to factory specifications to assure maximum efficiency in performance—ease in installation.

With unsurpassed production facilities and manufacturing capacity, the plants producing Allied Motor Parts can be relied upon to supply you with motor parts which equal or better, the parts they replace.

Look to your Allied jobber—*always*—for complete cooperation and *prompt* service on all of your motor parts needs.

ALLIED MOTOR PARTS COMPANY, Detroit 1, Michigan

When the Motor is Down Build it Up with

Pistons • Piston Pins • Piston Pin Set Screws • Piston Pin Lock Rings
Valves • Valve Keys • Valve Guides • Valve Springs
Expansion Plugs • Cylinder Sleeves • Cylinder Sleeve Assemblies
Water Pumps • Water Pump Parts and Packing

Allied Motor Parts are quickly available from NAPA Jobbers everywhere. Master stocks maintained in 39 NAPA Warehouses

Allied MOTOR PARTS

NAPA Assurance of Quality

Washington Runaround

(CONTINUED FROM PAGE 86)

appraised the progress made and attempted to develop means for acceleration adoption of the 1946 conference program at the local level. Maj. Gen. Philip B. Fleming, Federal Works Administrator and general chairman of the Safety Conference, has pointed out that President Truman has fixed the saving of at least 10,000 lives through the reduction of traffic accidents as the minimum goal of the safety conference. Begun on June 20, the nation-wide newspaper educational campaign in support of highway safety will continue through Sept. 15.

The emphasis of this "progress report" meeting was on the State and local levels, as evidenced by the attendance of many governors and other state officials. A basic report form was furnished the states. The purpose is to permit compilation of state data into a comprehensive report for the nation. The report is to be divided into eight sections, one devoted to each of the subjects treated by the committees of the President's conference: (1) accident records; (2) education; (3) enforcement; (4) engineering; (5) laws and ordinances; (6) motor vehicle administration; (7) public information, and (8) organized public support.

Tire Output Sets Record

Setting a new record the American tire industry during the first quarter of 1947, turned out 4,709,537 tires for trucks and buses, according to the Office of Materials Distribution, Department of Commerce. This is an increase of 8 per cent over the 1946 first quarter output of 4,364,712 tires. Output of passenger car tires also established a record in the first quarter of this year with a total of 20,356,719 tires, an increase of 7 per cent over the production of 19,030,059 tires in the first quarter of last year.

In the replacement tire market, 51 per cent or 2,418,415 were for trucks and bus tires in the first quarter of 1947. Shipments for original equipment totaled 1,613,959. Exports of truck and bus tires were only 357,368 units. Manufacturers' inventories on March 31 totaled 958,610 truck and bus tires.

In contrast camelback production in the first quarter of the current year declined 35 per cent to 15,276.6 gross tons under the corresponding period of 1946 when the output was 23,645.8 tons.

ICC Revises Log

All previous ICC orders regarding the driver's log form become null and void on July 1, the date on which a newly-revised form with accompanying instructions for recording the driver's daily log becomes effective. (See page 112).

The Commission's order affects only the form of the log itself and does not involve the controversial issues as to who should or should not be required to maintain the log under the ICC regulations. These features and all others pertaining to the safety regulations are now being discussed at the informal conferences referred to previously.

Registrations Up 18%

Motor truck registrations in 1946 totaled 5,725,692, an increase of approximately 18 per cent over the 1945 total of 4,834,742, according to the Public Roads Administration, whose figures are based on reports of state authorities. The percentage of increase in truck registrations exceeded that in any other class of motor vehicles. At the same time the all-time record of 34,472,145 established in 1941 was closely approached last year with registrations of 33,945,817 automobiles, buses and trucks, which exceeded by 10.8 pct 1945 registrations of 30,638,429.

PRA said that with new cars rolling from assembly lines "in steadily increasing numbers, motor vehicle registrations this year probably will break all previous records." Unfortunately, shutdowns due to steel and other material shortages do not support this forecast.

NEW ARRIVAL: "WHAT HAPPENED TO THE PEARLY GATES? THEY'RE RUINED."

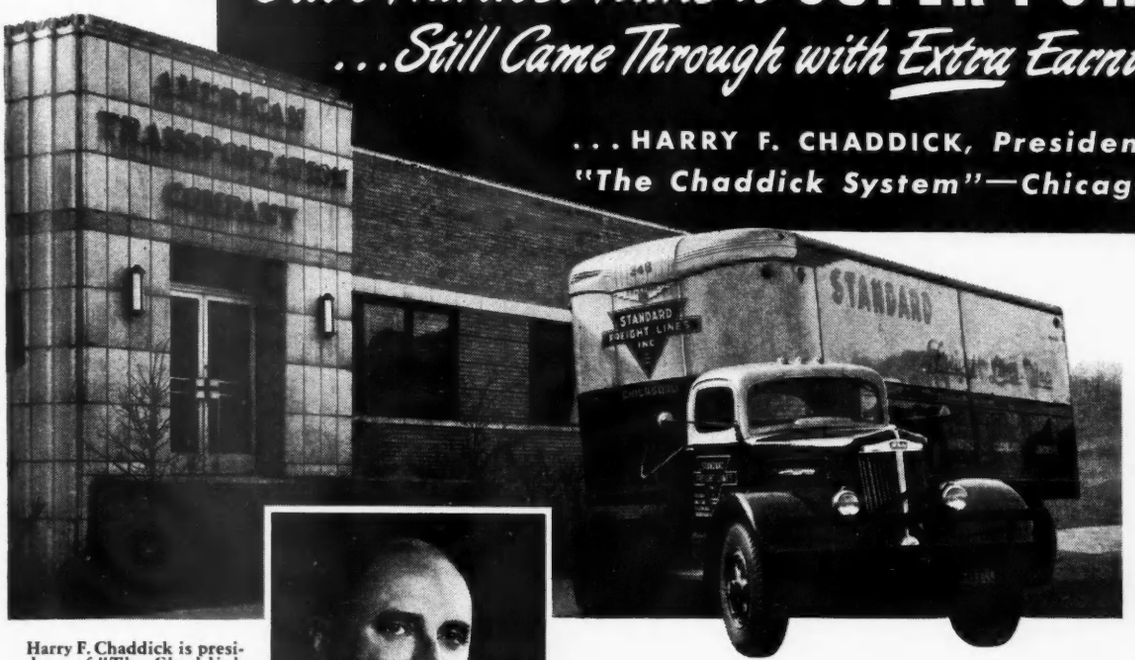
SAINT PETER: "A WOMAN DRIVER JUST CAME IN."

First Choice of the "Pros"

Seven years ago, "The Chaddick System" reported how White SUPER POWER performance meant extra earning power. Now read what Harry F. Chaddick reports after seven more years of extra earning experience with SUPER POWER.

"Gave Hardest Runs to SUPER POWER ...Still Came Through with Extra Earnings"

...HARRY F. CHADDICK, President
"The Chaddick System"—Chicago



Harry F. Chaddick is president of "The Chaddick System," Chicago, Ill. He is president, Army Transportation Ass'n. and vice-president, American Trucking Associations.

★ ★ ★

"The Chaddick System" includes The Standard Freight Lines, Inc., and American Transportation Co., serving a wide midwestern area.

Better Performance Earns *Extra* $2000 per Unit Per Year On "Hot Shot" Chicago-Detroit Operation

"Seven of the hardest years in transportation history have emphasized the importance of White Super Power in our organization," HARRY F. CHADDICK says. A look at White performance in "The Chaddick System" tells the story.

Mr. Chaddick says: "We now have 52 Whites in our fleet, some of which have run more than a million miles, and they are doing their daily work as economically as ever. We now have a number of the new WB-22T models, and already we see even greater efficiency and greater profit-making possibilities.

"The endorsement of our drivers of this new model comes from greater power, easier steering, and many improved driver comfort features. Drivers notice a reduction in fatigue and they maintain and better our schedules regularly."

That brings our SUPER POWER story up to date in "The Chaddick System." But there is more to it than that. Mr. Chaddick has a specific example that dramatically shows how SUPER POWER features are responsible for extra earnings.

"During the war," he reports, "we inaugurated an important Chicago-Detroit 'hot-shot' operation with two SUPER POWER units, relaying between these two points, transporting two 33,000 lb. payloads each 24 hours. Increase in efficiency is approximately 100% . . . reducing costs nearly 2 cents per truck mile. These White units operate in excess of 100,000 miles per year each, and it is not uncommon for them to operate well over a full year without a complete overhaul. We gave our hardest, most important runs to SUPER POWER and they still came through with extra earnings!"

Get Your Copy of "CORRECT APPLICATION"

The White system of CORRECT APPLICATION is developed to scientifically evaluate truck-using requirements for any truck-using business. Your White representative will gladly provide full information.

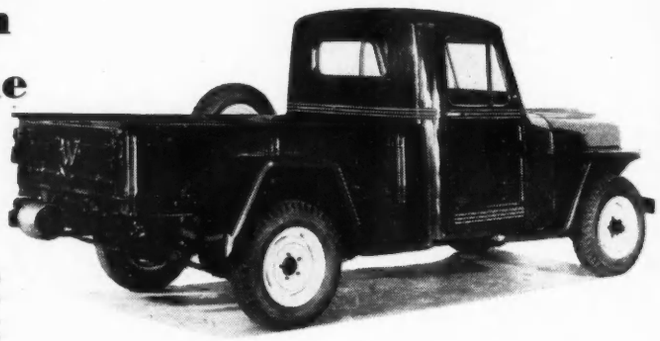
White

THE WHITE MOTOR COMPANY • Cleveland, Ohio

For more than 45 years the greatest name in trucks

Willys Adds 1-Ton 4 x 4 to Utility Line

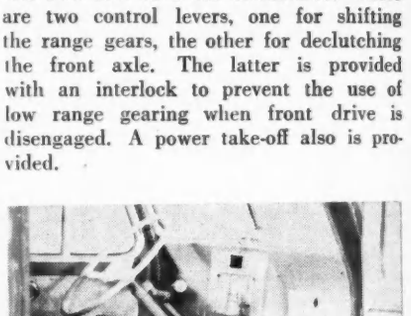
TO ROUND out its utility line, Willys-Overland Motors, Inc., has introduced the 4 x 4T four-wheel drive general purpose truck to supplement the 4 x 2T announced last month (See page 158, May CCJ). This model mounted on a 118 in. wheelbase chassis is rated 5300 lb. g.v.w. and carries a payload of 2000 lb. Since it comes in the same body styles as the 4 x 2T and has the same features of interchangeability and mechanical design, only the differences required for four-wheel drive are noted here.



New Willys 1-ton four-wheel-drive utility with power-take-off mounted at rear. G.v.w. is 5300 lb.

The front axle, supplied by Spicer, is of hypoid full-floating, driving and steering type with a gear ratio of 5.38 to 1 and spring centers underslung for clearance. It has the same basic parts as the jeep front axle. The front propeller shaft is of tubular type with Spicer needle bearing universal joints. Rear axle is the same as on the 4 x 2T, except that only one ratio is available—5.38 to 1.

A three-speed Warner Gear transmission is used in connection with a Spicer transfer case which has a normal ratio of one to one and 2.43 to 1 for underdrive. There are two control levers, one for shifting the range gears, the other for declutching the front axle. The latter is provided with an interlock to prevent the use of low range gearing when front drive is disengaged. A power take-off also is provided.



Cab interior of Willys model 4 x 4T showing arrangement of control levers

Since the lubricant level in the transfer case is lower than in the transmission, special provision is made for circulating lubricant through the entire gear train. For this purpose, the pair of gears connecting the transmission and transfer case are made to serve as a positive gear pump. Oil is pumped under pressure through a hole in the transmission case wall which is also provided with relief holes and an overflow level hole.

When the newlyweds from Fleety-Fleet went down to the station to take a Pullman to their honeymoon spot, the office gang, there to see them off, admonished: "Don't let the train passengers play any tricks on you."

Newlyweds: "Don't worry—they won't catch us napping!"

CCJ Reader Digest

(CONTINUED FROM PAGE 33)

Timing Trade-ins

by AL ORSCHELN
Orscheln Brothers Truck Lines

There comes a time when economical maintenance runs out. Repair costs go up to a point where it is more economical to start over by buying a new truck.

We have proved to our satisfaction that three things make for greater vehicle economy. One is a method of determining the correct trade-in period without regard to fixed depreciation. The second is the elimination of wreck figures on the basis that they have no relation to overall maintenance costs. The third point is to get as many miles as we can out of the useful life of a truck. We are now getting 16 hours a day and hope to get 20.

Our record system is based on these five fundamentals: miles per month, total accumulated mileage, total accumulated cost, cost each month and total accumulated maintenance.

From these we plot three graphs showing cost of the vehicle plus operational cost, operation cost alone and maintenance cost alone. While the first graph, which includes vehicle cost, necessarily starts high, the others start low. But cost of operation never got any cheaper after the 36th month. When we see a graph line climbing steadily month after month, we know it is not likely to take a sudden nose dive—we know it is up there for good.

The graphs teach us that the trade-in must take place at or before the operational cost line crosses the line of original cost and operation. Miles you can put on before this period will definitely increase the economy of operation.

END

(Please resume your reading on P. 34)

63 Years of Safe Driving

Sixty-three years of accident-free driving are represented by the records of these Greyvan truckmen showing receiving safety awards from Greyvan President George O. Watson at a recent meeting in Chicago. Those in the group are, from left to right, Harold W. Morgan, 9 years; C. Warren De Nee, 7 years; Harry Blumenauer, 7 years; William Preece, 10 years; Samuel McNay, 9 years; Mr. Watson, Julius H. Brenizer, Max Parsley and Larry J. Graham, each 7 years

A.S.B.E. ANNUAL CONVENTION

The American Society of Body Engineers are well under way with plans for their Second Annual Technical Convention to be held at the Rackham Memorial Building on November 5th, 6th and 7th.

Because of the enthusiastic interest shown last year, greater efforts will be made to make this year's event bigger and better than ever. Arrangements have been made by the Society's President, Mr. I. Louis Carron, for the use of the large banquet hall for the exhibits and the E.S.D. auditorium for all technical sessions.

Technical sessions will be held in the mornings, afternoons and evenings. Speakers and subjects will be arranged having special interest to all body men. Display booths will again be provided for Manufacturers of Automobile Body material and equipment and requests for space are already coming in.

General Chairman of the Convention, Mr. John C. Widman, has announced formation of the following Committee: Program and Discussion, Lynn Fill; Exhibits, Arthur Bradley; Finance, Harvey Anschuetz; Art and Printing, C. Y. Cheriez; Publicity, A. H. Haberstump. August Keller, Edward Pangborn.

CCJ NEWSCAST

ATA PLANS BY-LAW CHANGE LIMITING PRESIDENT'S TERM

The following changes in the by-laws of the American Trucking Associations, Inc., have been approved by the executive committee and submitted to the board of directors for final approval:

Presidency to be limited to one year; president to serve without salary but with per diem compensation and expenses.

President's powers as executive officer passed on to managing director.

New office of chairman of the board created, to which president will move up. Thus Ted V. Rodgers would become first chairman.

First vice-president to move up to presidency the following year. Thus first vice-president would be expected to serve one year as such, one year as president and one year as chairman of the board. Other vice-presidents are not in line.

ATA PLANS '48 CONVENTION

The executive committee of American Trucking Associations, Inc., has decided to hold the 1948 annual convention at Washington, D. C., during the month of October. Special activities are planned to commemorate the 50th anniversary of the trucking industry and the 15th anniversary of ATA. The 1947 convention is scheduled for Oct. 26 to 30 at The Biltmore, Los Angeles.

ROAD SHOW IN '48

The most spectacular road show in the history of the American Road Builders' Association is scheduled for Soldier Field, Chicago, July 16 to 24, 1948. For the first time in the long series of road shows, construction equipment manufacturers will have unlimited outside space for proper display of their machines. Exhibits requiring shelter will be amply taken care of in the expansive enclosed exhibition halls.

ASI SHOW IN CHICAGO

Plans for the 1947 Automotive Service Industries Show on Chicago's Navy Pier, Dec. 8 to 13, are well underway and preliminary surveys indicate that the event will eclipse even last year's record-attendance show at Atlantic City.

NEW NASH TRUCK ENGINEER

Eugene L. Mench, former transportation engineer of International Harvester Co., has joined the engineering staff of Nash Motors Division where he will be in charge of truck engineering.

DATES & DOINGS

JULY 7-11—Fleet Supervisor Training Course, University of Washington, Seattle, Wash.

JULY 14-18—Fleet Supervisor Training Course, Oregon State College, Corvallis, Oregon.

JULY 21-25—Fleet Supervisor Training Course, University of California, Berkeley, Calif.

JULY 28-AUG. 1—Fleet Supervisor Training Course, University of So. California, Los Angeles, Calif.

AUG. 11-15—Fleet Supervisor Training Course, University of Michigan, Ann Arbor, Mich.

AUG. 21-23 — West Coast Transportation & Maintenance Meeting, Society of Automotive Engineers, Biltmore, Los Angeles, Calif.

AUG. 25-29—Fleet Supervisor Training Course, University of Richmond, Richmond, Va.

OCT. 26-30—American Trucking Associations, Inc., Annual Convention, The Biltmore, Los Angeles, Calif.

NOV. 5-7—American Society of Body Engineers Annual Technical Convention, Rockham Memorial Bldg., Detroit, Mich.

DEC. 8-13 — Automotive Service Industries Show, Navy Pier, Chicago, Ill.

JAN. 12-16, 1948—Annual Meeting, Society of Automotive Engineers, Book-Cadillac Hotel, Detroit, Mich.

JULY 16-24, 1948 — Road Show, American Road Builders' Assn., Soldier Field, Chicago, Ill.

TOLL ROAD THREAT

Calling attention to proposals for "super" toll roads now being considered by legislatures of 13 states or already acted on, Arthur C. Butler, Director of the National Highway Users Conference, has urged the nation's taxpayers and motorists to examine with "utmost caution" all such projects.

Mr. Butler's statement asked: "Who is 'selling' these roads? In many cases they are supported by earnest, conscientious citizens who sincerely believe in their worth. But in a recent news story about proposals for a $6,500,000 toll highway in New Hampshire [it was said that] 'powerful out-of-state financial interests were deeply involved' in promoting the road. It reported that one underwriting firm 'is admittedly hopeful of capturing the lucrative commissions involved in heading the syndicate of financial houses' that would underwrite bonds for the highway."

STATE LEGISLATIVE ROUND-UP

State legislatures have been busy this spring passing a good many new laws affecting trucks—some good, some bad—but all of paramount interest to fleetmen. Up to press time, here is the way they lined up:

Colorado: Size and weight formula based on 800 (L plus 40) passed both houses.

Delaware: Increased fees including 2-cent per ton-mile tax on trucks over 40,000-lb.

Indiana: Increased fees enacted.

Iowa: Liberalized size and weight limitations in line with ASSHO code enacted.

Kansas: Measure to increase fees killed.

Maine: Increased fees, maximum weight increase from 45,000 to 50,000, maximum length increase from 40 to 45 ft., all enacted. Two-cent gasoline tax increase likely to be held up for referendum.

Maryland: Increased fees on all vehicle registrations from 4 to 24 per cent and tax of 40 cents per hundred weight on trailers enacted.

Minnesota: Increased fees and 8,000-lb. axle weight limitation between March 10 and May 15 enacted. Measure to increase length, killed.

Missouri: Measure to increase fees killed.

Nebraska: Measure to increase fees killed.

New Jersey: Measure to increase fees killed.

New Mexico: Measure to decrease fees killed.

New York: Increase fees enacted.

North Dakota: Increased passenger car fees by 25 per cent and increased truck fees by amounts ranging from $5 to $209, enacted.

Oregon: Increased fees enacted.

South Dakota: Increased fees on class A and B carriers by $10 and $15 respectively, enacted.

Vermont: Truck fees increased 20 per cent, passenger car registrations fixed at $25, gas tax increase from 4 to 4½ cents, all enacted.

West Virginia: Increased fees enacted.

Wisconsin: Measure to reduce registration fees, killed.

Wyoming: Increased fees enacted.

MARCH TRUCKLOADINGS UP

The volume of freight transported by motor carriers in March increased 7 per cent over February and 17.1 per cent over March of last year, according to statistics compiled by ATA. The ATA index figure, computed on the basis of the average monthly tonnage of the reporting carriers for the three-year period of 1938-1940 as representing 100, was 206.

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CCJ Newscast

(CONTINUED FROM PAGE 94)

NEWS OF THE INDUSTRY

Current expansion plans for the White Motor Co. include construction of a new plant for its coach division at 1455 East 185th St., Cleveland, and a new manufacturing plant for White Motor Co. of Canada, Ltd., at Montreal. The announcement was contained in the company's annual report which revealed net sales in 1946 of $73,857,527 and a new profit of $1,971,694.

Gar Wood Industries has moved its headquarters offices in Wayne, Mich., to the Bendix plant used for the construction of airplane landing gear during the war.

G. L. Ohrstrom & Co., New York, has purchased all the capital stock of Rotary Lift Co., Memphis, Tenn.

Kelsey-Hayes Wheel Co., Inc., Detroit, has purchased the Lathan Co., Inc., South San Francisco, which will continue to manufacture vacuum power brake equipment as a wholely owned subsidiary of the Detroit firm.

Formal opening of the new Canadian plant of the Timken Roller Bearing Co. in St. Thomas, Ont., was made with appropriate exercises on May 23, 1947.

FORD LAUNCHES SALES

A nation-wide truck merchandising training program was launched last month by the Ford Motor Co. at a conference of top sales executives including regional truck and fleet managers. According to J. D. Ball, director of truck fleet sales, "the program is the most extensive ever attempted by the company and is designed to help regain first place for Ford in the truck field."

AWARD FOR SEALED POWER ADS

The certificate of merit for product-selling; color advertising in industrial and technical magazines during 1946 has been awarded to the Sealed Power Corp. by the Chicago Federated Advertising Club in its fifth annual advertising competition.

The jury of awards selected Sealed Power's series, based on a "Not 2, Not 6, but 26" theme, as an unusual contribution to trade advertising.

New Army Goliath

Said to be the largest semi-trailer ever built, the Army's new T63 was built by Easton Car & Construction Co. Carrying capacity is 60 tons. Most interesting feature is the use of vertically moving radius rod and trunnion axle between each of the six sets of dual wheels. Left and right equalizing movement is provided for each wheel. Tires are 14.00 x 24

Domestic Motor Truck Factory Sales by Gross Vehicle Weight*

	5,000 & Less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
January	25,387	11,049	21,427	11,731	3,259	2,481	1,903	77,300
February	25,893	13,052	21,564	15,915	2,316	2,702	1,811	83,253
March	27,220	16,917	22,404	17,093	3,062	3,381	1,929	92,006
April	24,387	15,953	18,910	14,846	3,582	3,439	2,191	83,308
4 Months—1947	102,887	56,971	84,305	59,645	12,219	12,008	7,834	335,867
4 Months—1946	67,542	12,161	35,304	27,228	3,988	6,170	4,018	153,411

*—Automobile Manufacturers Association.

FEDERAL EARNS $736,533

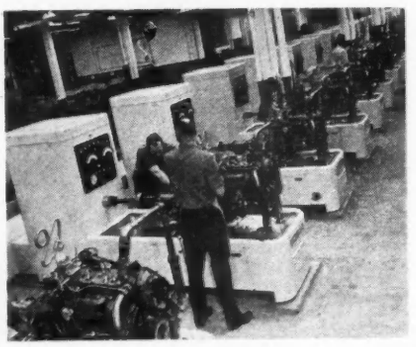
Federal Motor Truck Co. earned a profit of $736,533.82 for the year ending Dec. 31, 1946, as compared with a profit of $579,618.76 for 1945. Sales during 1946 of $16,321,006.15 were higher than any peacetime year in the 37-year history of the company. Sales for the first quarter of 1947 were reported to be approximately double those of the corresponding quarter of 1946.

Thomas R. Lippard has been re-elected president of Federal. Also re-elected were: Ferdinand L. Ruddon, vice-president; Chandler A. Rogers, secretary and treasurer; M. L. Hudson, assistant secretary.

ROBERT H. CLARK DIES

Robert H. Clark, general superintendent of transportation of the Consolidated Edison Co., New York, died at his home in Wilton, Conn. on March 23. Well known in fleet circles, he was extremely active in the Metropolitan Section of the Society of Automotive Engineers.

Dynamometers for Dodge



Part of a battery of 60 engine dynamometers recently installed at the main Dodge plant. Each engine is run at 500 r.p.m. for five minutes, at half-load for 12 minutes and finally a full-load spurt. All adjustments and connections are carefully checked during run

FREIGHT RATES "CHAOTIC"

Speaking at the annual meeting of the U. S. Chamber of Commerce, John V. Lawrence, managing director of the American Trucking Association, Inc., declared recently that freight rates are in a "chaotic condition" and must be given a "major overhauling" if the nation's transportation facilities are to prosper.

"No useful purpose will be gained by arguing the point as to 'Who killed Cock Robin'," Mr. Lawrence declared, "but no trade or industry can survive if an important share of its output is composed of 'loss leaders'."

1947 Truck Trailer Production

	March	3 Months
Vans:		
Insulated and Refrigerated	223	604
All other closed top	2,216	8,287
Open top	223	791
Total Vans	2,662	9,682
Platforms:		
With cattle and stake racks	323	1,220
With grain bodies	93	302
All other	1,049	3,296
Total Platforms	1,465	4,818
Tanks	224	776
Pole and Logging:		
Single Axle	580	1,858
Tandem Axle	155	400
Total	735	2,258
Low-bed heavy haulers	214	609
Off-highway	29	202
Dump trailers	101	323
All other trailers	138	342
Total Trailers	5,568	19,010
Chassis for trailers	374	1,025
Total Trailers and Chassis	5,942	20,035

* Prepared by Bureau of The Census, Industry Division.

FLEET FACTS

A million dollar expansion and modernization program is being undertaken by Consolidated Freightways, Portland, Ore. Commenting on the program President Leland James said that it was made possible by recent passage by the Oregon legislature of a bill to make the 72,000-lb. wartime measure permanent.

Bridgeways, Inc., Detroit, has purchased the Dohlun Transfer Co. of Milwaukee, and with the acquisition will extend its operations to include a main line run from Chicago to Milwaukee. A new terminal is being constructed at the latter terminal and operations now serve a total of 10 states.

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Bulk Cement Hauler

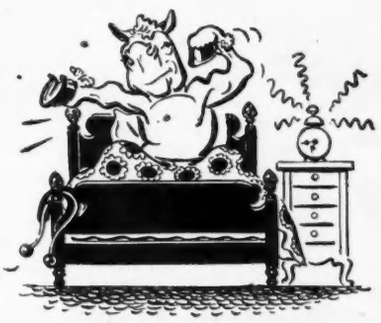
Internationals Cementers, Inc., of Long Beach, Cal., recently purchased several over-sized rigs like this one for bulk hauls. The tractor is an International W-4064-H six-wheeler with Hall-Scott HS-400 engine developing 295 hp. The special bulk tank tandem trailer is 30 ft. long, carries 37,600 lb., load has two screw conveyors in its "W" bottom powered by auxiliary engine

Pep up horsepower . . .

Motors give faster pick-up, more power and smoother performance right away when you put in Casite. It's the quick, sure tune-up used by leading fleets throughout the nation.

and keep it pepped up

For motors that run better and last longer, use Casite regularly—according to instructions on container. Casite retards formation of sludge and gum . . . speeds lubrication . . . cleans motors and *keeps* them clean.



. . . with Casite

It's such an easy way to cut operating costs and increase fleet efficiency. Your motors will run better and last longer with Casite . . . no matter what kind of motor oil you're using. The Casite Corporation, Hastings, Michigan.

GIVE ENGINES BETTER BREAK-IN WITH CASITE

CLEANS MOTORS
KEEPS
MOTORS CLEAN

CCJ Newscast

(CONTINUED FROM PAGE 96)

HOME TOWN NOTES

Readers in the following localities will be interested in these items of local or regional notes:

Fargo, N. D.: A factory outlet for Snap-On Tools Corp. at 421 N. P. Ave. Louis J. Johann will be in charge.

San Francisco: A new firm, organized by Herbert P. Sioussat, to be known as WesTruck Products Co. It will have exclusive western distributorship for Oltman-O'Neill truck bodies.

Stockton, Cal.: A new oxygen-acetylene-carbide plant for Linde Air Products Co. on Morengo Road near Fresno Ave. A warehouse for the parent Co., Union Carbide and Carbon Corp., will also be set up at the same location.

Wabash, Ind.: A new warehouse for Thermoid Co., replacing the present warehouse in Chicago. H. L. Conover will be in charge.

Marion, O.: A new distributorship for Bantam Supercargo truck trailers to be known as Truck Trailer Sales Co. Under the management of Clarence Carter, it is located at 209 E. 7th St.

Riverhead, N. Y.: Merrill-White Motor Sales has opened a new White distributorship in this location, serving Suffolk County, Long Island, as well as traffic on route 58. Under management of D. R. Merrill, the firm was formerly located at Patchogue.

TRAILER PRICE PREDICTION

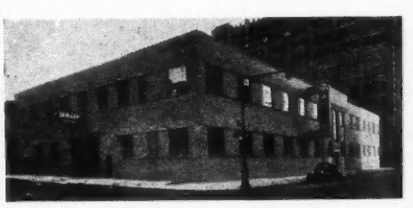
John B. Hulse, secretary-manager of the Truck Trailer Manufacturers Association, speaking before the ATA in Denver last month, predicted that trailer prices would not be lowered substantially within the predictable future. His statement was based on the fact that while prices of all manufactured products had increased 71 per cent between 1939 and 1947, average trailer prices were only 17 per cent above the prewar figure.

MERLE FULLERTON DIES

Merle Fullerton, owner and operator of Fullerton Transfer & Storage Co., Youngstown, Ohio, died at his home in that city early last month. He was also chairman of the board of North American Van Lines, Inc., and held many other posts in the household carriers industry.

White Opens New Branch in New York

To take care of increasing service demands in the New York City area, The White Motor Company has opened a new and more commodious branch at 650 Eleventh Avenue, stretching an entire block from 47th to 48th Street. Full unit repair equipment and a complete machine shop are a part of the new set-up.



New White New York City branch is at 11th Ave. between 47th and 48th Sts.

Announcement of the new branch and the experienced staff in charge is made by P. E. "Jerry" Tobin, regional manager. J. E. Bain, former manager of the Brooklyn branch, has been named manager of the New York City branch. W. K. Bennett, former Brooklyn branch service manager, will be service manager. John Andes is being transferred from the Long Island City branch to become parts superintendent.

A new National Accounts Division has been established in the New York metropolitan region and will likewise be located at the New York branch. G. Taylor Myers, formerly New York City sales manager, will be in charge. He will be assisted by Harry Burkhard, Robert E. Pittfield, Robert E. Wilke, and John J. Reidy.

Henceforth the metropolitan regional offices of White will be located at the same address.

Truck Specifications Table

OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY

COMMERCIAL CAR JOURNAL

Key to Definitions, References and Abbreviations

DEFINITIONS

MAKE AND MODEL
Only Domestic Truck Models are listed.

OPTIONAL UNITS
For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE
The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE
The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT
The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE
The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE
The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE
The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE
The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.
Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE
Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS
Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.
c.o.e.—Cab-Over-Engine design.
(D)—Diesel-engine equipped.
(T)—Designed for tractor use only.
(C)—Converted Ford or Chevrolet Model.

(2) International Harvester—Specifications shown represent only the basic standard chassis units and standard chassis ratings in keeping with definitions established by Commercial Car Journal. Optional units not shown such as engines, clutches, transmissions, axles or axle ratios, brakes, wheels and tires, frames or frame reinforcements, optional wheelbases or any other units which make up part of the truck chassis and which International will furnish and approve from the factory as optional equipment can or will change either the ratings, chassis weight shown or performance of the truck as indicated by this list.

Also the company reserves the privileges of assigning special gross vehicle ratings for any chassis providing in the opinion of our engineering department, the type of service justifies the new rating without decreasing the safety factor designed into the truck.

(a)—Available with Eaton Two-Speed Axle designated KS Models.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix
BL—Brown-Lipe.
Bu or Bud—Buda.
BW—Bendix-Westinghouse
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
Eat—Eaton.
F—Ford.
Fu—Fuller.
H—Hotchkiss.
Her—Hercules.
L—Lockheed.
LH—Lockheed front, Wagner "hi-Tork" rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Shu—Shuler.
Spi—Spicer
T or Tim—Timken.
Tw—Timken-Westinghouse
TW—Timken-Wisconsin.
WG—Warner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
Ws—Westinghouse.
WW—Westinghouse or Wagner

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group.
4R—Forward and rear units of Rear Axle Group.
6—All wheels.

BRAKES—SERVICE

Location

4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

Type

I—Internal.
X—External.

Operation

A—Air.
H—Hydraulic.
V—Vacuum.
Dp—Dual Primary

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission.
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry.
c—Cast iron.
Ci—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalite.
G—Gunite.
N—Nickel iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center
Tf—Tapered front.
A—Straight section sidemembers, lined with oak inserts.
Z—Reinforced (X) member frame, box type sections.

REAR AXLE

Final Drive and Type

B—Bevel.
CD—Chain Drive
F—Full-floating.
Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
¾—Three Quarters Floating.
½—Semi-Floating
T—Torque Tube

GEAR RATIOS

(**) Only one ratio.

Drive and Torque

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods
T—Torque Arm.

GOVERNOR STANDARD

Y—Yes.
N—No.

(Continued from Page 101)

Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE Minimum Standard	WHEELBASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	Forward Sp'ds	REAR AXLE: Make and Model	Gear and Type	Drive 'X' Torque	Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operat'n	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimensions (Min. Std. W. B.)	FRAME: Side Rail Dimensions	Type
	Available																													
1	C8200-SP		126	133	15000		7.00/20D	7.50/20	Wau 6BM	6–3½x4¼	263	5.9	180	78–2800	7–2½x10¼	N	WG T9	4	Tim 53440H	SF	H	** –6.67	Tim 32502H	L4IH			a	TX	Opt	10x3x¼	T
2	C-250-SP		105		18000		7.50/20D	8.25/20	Wau 6BZ	6–4x4½	320	5.9	210	95–2500	7–2½x10¼	N	Fu 5A330	5	Tim 54411H	SF	R	6.83–7.4	Tim 32502H	L4IH	334	583	a	TX	Opt	10x3x¼	T
3	C8-250-SP		105		20000		8.25/20D	9.00/20	Wau 6BZ	6–4x4½	320	5.9	210	95–2500	7–2½x10¼	N	Fu 5A330	5	Tim 54411H	SF	R	6.83–7.4	Tim 32502H	L4IH	334	583	a	TX	Opt	10x3x¼	T
4	C8-400-L8P		105		21500		9.00/20D	10.00/20	Wau 6BZ	6–4x4½	320	5.9	210	95–2500	7–2½x10¼	N	Fu 5A330	5	Tim 56410H	SF	R	6.83–7.4	Tim 35000H	L4IH	334	583	a	TX	Opt	12x3x¼	T
5	C8-500-SP		105		22000		9.00/20D	10.00/20	Wau 6MZA	6–4¼x4½	404	5.9	286	112–2500	7–2½x12½	Y	Fu 5F430	5	Tim 56410H	SF	R	6.83–7.4	Tim 35000H	L4IH	334	583	a	TX	Opt	12x3x¼	T
6	C8-550-SP		105		24000		9.00/20D	10.00/20	Wau 6MZA	6–4¼x4½	404	5.9	286	112–2500	7–2½x12½	Y	Fu 5F430	5	Tim 58300H	SF	R	6.83–7.4	Tim 35000H	L4IH	380	660	a	TX	Opt	12x3x¼	T
7	C8-550-SPX		112		32000		10.00/20D	11.00/20	Wau 6MZA	6–4¼x4½	404	5.9	286	112–2500	7–2½x12½	Y	Fu 5F430	5	Tim 8200H	2F	R	** 7.84	Tim 26450H	L4IH	570	1051	a	TX	Opt	14x3x⅜	T
8	C8-600		Opt	Opt	36000		11.00/20	11.00/24	Wau 6SRKR	6–4½x5½	517	5.9	365	125–2300	7–2½x12½	Y	Fu 5F430	5	Tim 8200PA	2F	R	** 7.84	Tim 27452TW	L4IH	722	1051	a	TX	Opt	14x3x⅜	T
9	C8-600-SP		Opt	Opt	40000		11.00/20	11.00/24	Wau 145GK	6–5½x6	779	5.6	590	186–2000	7–3½x17⅞	Y	Spi 7841▽	8	Tim 8200PA	2F	R	6.42–7.84	Tim 27452TW	L4IH	722	1051	a	TD	Opt	14x3x⅜	T
10	(D)C8-600-SP.Opt.		Opt	Opt	40000		11.00/20	11.00/24	Cum HB600	6–4⅞x6	672	17.5	19	150–1800	7–4½x16⅓	Y	Spi 7841▽	8	T SW3012PA	WF	R	** –6.16	Tim 27452TW	L4IH			A	TD	Opt	14x3x⅜	T
11	Chevrolet EP		116		4600		6.00/16S	15S	O-Thrift Mas.	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	3	Own	Hy‡	T	** –4.11	Own	O4IH	159	242	Co	2I	39	5¼x2¼x⅜	C
12	ER		125		5800		158	7.00/17S	O-Thrift Mas.	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	3	Own	HyF	H	** –4.57	Own	O4IH	178	272	Co	2I	48¼	5⅜x2¼x⅜	C
13	ES		137		8800		7.00/17S	7.00/18	O-Thrift Mas.	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	Own	HyF	H	** –5.14	Own	O4IH	243	371	Co	2I	60	7x2¾x⅜	C
14	QJ		137		‡13000		7.00/20S	7.00/20	O-Thrift Mas.*	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60	7x2¾x⅜	C
15	QK		161		‡13000		7.00/20S	7.00/20	O-Thrift Mas.*	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84	8¼x2¼x¼	C
16	(School bus), QL		161		12000		6.50/20D	7.00/20	O-Thrift Mas.*	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	.....	8¼x2¼x¼	C
17	QVS		137		15000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3⅛	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60	8¼x2¼x¼	C
18	QWS		161		15000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3⅛	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84	8¼x2¼x¼	C
19	(c.o.e.) QP		110		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3⅛	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60½	8¼x2¼x¼	C
20	(c.o.e.) QR		134		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3⅛	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own,	O4IH	330	478	Co	2I	84½	8¼x2¼x¼	C
21	(c.o.e.) QS		158		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3⅛	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	105⅛	8¼x2¼x¼	C
22	QV		137		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3⅛	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60	8¼x2¼x¼	C
23	QW		161		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3⅛	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84	8¼x2¼x¼	C
24	(School bus) QX		199		15000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3⅛	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	.....	8¼x2¼x¼	C
25	Corbitt■ 18BG		137	Opt	18000		9.00/20	10.00/20	Con M6330	6–4x4½	330	6.1	246	104–2800	7–2½x12	Y	Fu 5A33	5	TimH100DPH	HyF	H	** –5.29	Tim 32502H	L4IHV			a	TX	Var	8x3¼x¼	T
26	22BG		145	Opt	22000		10.00/20	10.00/22	Con B6371	6–4½x4⅝	371	6.0	280	100–2600	7–2½x13½	Y	Fu 5A43	5	Tim L100DPH	HyF	H	** –5.29	Tim 35000H	L4IHV			a	TX	Var	8x3¼x¼	T
27	25BG		148	Opt	25000		10.00/22	11.00/22	Con B6427	6–4¼x4⅞	427	5.9	325	127–2600	7–2½x13½	Y	Fu 5A43	5	Tim Q100P	HyF	H	** –6.17	Tim 35100TW	Ws4IA			a	TX	Var	8½x3¼x¼	T
28	(T) 18TG		137	137	18000		9.00/20	10.00/20	Con M6330	6–4x4½	330	6.1	246	104–2800	7–2½x12	Y	Fu 5A33	5	Tim H100P	HyF	H	** –5.29	Tim 32502TW	Ws4IA			a	TX	60½	7½x3¼x¼	T
29	(T) 22TG		145	145	22000		10.00/20	10.00/22	Con B6427	6–4¼x4⅞	427	5.9	325	127–2600	7–2½x13½	Y	Fu 5A43	5	Tim L100P	HyF	H	** –5.29	Tim 35000TW	Ws4IA			a	TX	60½	8x3¼x¼	T
30	(T) 25TG		148	148	25000		10.00/22	11.00/22	Con R6513	6–4½x5⅜	513	5.9	400	164–2600	7–3¼x14½	Y	Fu 5A620	5	Tim Q100P	HyF	H	** –6.17	Tim 35100TW	Ws4IA			a	2	60½	8½x3¼x⅛	T
31	(T) 28TG		148	148	28000		10.00/22	11.00/24	Con R6602	6–4½x5⅜	602	5.9	460	183–2600	7–3¼x14½	Y	Fu 5A650	5	Tim S200P	HyF	H	** –6.42	Tim 26450W	Ws4IA			a	2	60½	8½x3¼x⅛	T
32	(D) (T) 27TD		152	152	27000		10.00/22	11.00/24	Cum HB600	6–4⅞x6	672	17	500	150–1800	7–4½x16½	Y	Fu 5A920	5	Tim Q100P	HyF	H	** –5.29	Tim 26450W	Ws4IA			a	2	60½	8½x3¼x⅛	T
33	(D) (T) 28TD		155	155	28000		10.00/22	11.00/24	Cum NHB600	6–5½x6	743	15	575	200–2100	.....	Y	Fu 5A920	5	Tim S200P	HyF	H	** –6.42	Tim 26450W	Ws4IA			a	2	60½	8½x3¼x⅛	T
34	2-speed models																													
35	(T) 18TG		137	137	18000		9.00/20	10.00/20	Con M6330	6–4x4½	330	6.1	246	104–2800	7–2½x12	Y	Fu 5A330	5	Tim H300P	dF	H	6.13–8.15	Tim 32502TW	Ws4IA			a	TX	60½	7½x3¼x⅛	T
36	(T) 22TG		145	145	22000		10.00/20	10.00/22	Con B6427	6–4¼x4⅞	427	5.9	325	127–2600	7–2½x13½	Y	Fu 5A430	5	Tim L300P	dF	H	6.32–8.20	Tim 35000TW	Ws4IA			a	TX	60½	8x3¼x¼	T
37	(T) 25TG		148	148	25000		10.00/22	11.00/22	Con R6513	6–4½x5⅜	513	5.9	400	164–2600	7–3¼x13½	Y	Fu 5A620	5	Tim Q300P	dF	H	6.53–8.53	Tim 35100TW	Ws4IA			a	2	60½	8½x3¼x⅛	T
38	(T) 28TG		148	148	28000		10.00/22	11.00/24	Con R6602	6–4½x5⅜	602	5.9	460	183–2600	7–3¼x13½	Y	Fu 5A650	5	Tim R300P	dF	H	4.92–6.42	Tim 26450W	Ws4IA			a	2	60½	8½x3¼x⅛	T
39	(D) (T) 22TD		145	145	22000		10.00/22	10.00/22	Her DWXD	6–4¼x4¼	404	15	330	146–2600	.....	Y	Fu 5A430	5	Tim L300P	dF	H	6.32–8.20	Tim 35000TW	Ws4IA			a	TX	60½	8x3¼x¼	T
40	(D) (T) 25TD		148	148	25000		10.00/22	11.00/22	Her DRXC	6–4½x5¼	529	14	380	147–2200	7–3½x13¾	Y	Fu 5A620	5	Tim Q300P	dF	H	6.53–8.53	Tim 35100TW	Ws4IA			a	2	60½	8½x3¼x⅛	T
41	(D) (T) 27TD		152	152	27000		10.00/22	11.00/24	Cum HB600	6–4⅞x6	672	17	500	150–1800	7–4½x16½	Y	Fu 5A920	5	Tim R300P	dF	H	4.92–6.42	Tim 26450W	Ws4IA			a	2	60½	8½x3¼x⅛	T
42	(D) (T) 28TD		155	155	28000		10.00/22	11.00/24	Cum NHB600	6–5½x6	743	15	575	200–2100	.....	Y	Fu 5A920	5	Tim R300P	dF	H	4.92–6.42	Tim 26450W	Ws4IA			a	2	60½	8½x3¼x⅛	T
43	Crosley B		80		1650		4.50/12	.....	Own CE7	4–2½x2¼	44	7.5	33	26–5400	5–‡		WG-ASI-T92	3	Spi	2F		** –5.17	Own	Haw M	64	72	C	.....	.....	.....	.....
44	Dodge WC		116		4600		6.00/16S	6.50/16S	Own T-112	6–3¼x4⅜	217	6.6	172	95–3600	4–2½x4.8	N	NP 36520	3	Own T112	HyS	H	3.73–4.78	Own T112	O4IH	174	264	Co	TX	40½	6⅞x2⅛x⅜	C
45	WD-15		120		5200		TA-15S	TA-15S	Own T-114	6–3¼x4⅜	217	6.6	172	95–3600	4–2½x4.8	N	NP 36520	3	Own T114	HyS	H	3.73–4.78	Own T114	O4IH	183	276	Co	TX	44½	6⅞x2⅛x⅜	C
46	WD-20		120	133	7000		6.50/16S▲	6.00/20	Own T-116	6–3¼x4⅝	230	6.7	184	102–3600	4–2½x4.8	N	NP 37520	3	Own T116	HyF	H	3.90–4.89	Own T116	O4IH	197	294	Co	TX	44½	6⅞x2⅛x⅜	C
47	WF-21		135	160	9500		6.00/20S‡	6.50/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF	H	5.11–6.83	Own T118	O4IH	284	407	C	TX	60	7x2¾x.21	C
48	WF-31		135	200	14000		6.00/20S‡	8.25/20§	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF	H	5.11–6.83	Own T118	O4IH	284	407	C	TX	60	7x2¾x.21	C
49	WFA-31		135	200	14000		6.00/20S‡	8.25/20§	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Eat A5-1350	SFd	H	Dual Rge.	Own T118	O4IH	284	407	C	TX	60	7x2¾x.21	C
50	(c.o.e.) WFM-35		105	159	14500		6.00/20S‡	8.25/20§	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Own T128	HyF	H	5.11–6.83	Own T128	O4IH	284	407	C	TX	60	7x2¾x⅜	C
51	(c.o.e.) WFMA-35		105	159	14500		6.00/20S‡	8.25/20§	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Eat A5-1350	SFd	H	Dual Rge.	Own T128	O4IH	284	407	C	TX	60	7x2¾x⅜	C
52	WG-40		136	220	15500		6.00/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Own T120	HyF	H	5.11–7.16	Own T120	O4IHV	359	503	C	TX	60½	8⅜x2⅜x⅜	C
53	WGA-40		136	220	15500		6.00/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat A5-1350	SFd	H	Dual Rge.	Own T120	O4IHV	359	503	C	TX	60½	8⅜x2⅜x⅜	C
54	WGAX-40		136	220	16000		9.00/20D°	9.00/20°	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat 16500	SFd	H	Dual Rge.	Own T120	O4IHV	391	609	C	TX	60½	8⅜x2⅜x⅜	C
55	(c.o.e.) WGM-40		105	159	16000		6.00/20D	8.25/20	Own T-130	6–3⅞x4½	250	6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Own T130	HyF	H	5.11–7.16	Own T130	O4IHV	359	503	C	TX	60	8⅜x2⅜x⅜	C
56	(coe) WGMA-40		105	159	16000		6.00/20D	8.25/20	Own T-130	6–3⅞x4½	250	6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat A5-1350	SFd	H	Dual Rge.	Own T130	O4IHV	359	503	C	TX	60	8⅜x2⅜x⅜	C
57	(coe) WGMAX-40		105	159	16500		9.00/20D°	9.00/20°	Own T-130	6–3⅞x4½	250	6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat 16500	SFd	H	Dual Rge.	Own T130	O4IHV	391	609	C	TX	60	8⅜x2⅜x⅜	C
	WH-45		136	220	15500		6.50/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Own T120	HyF	H	5.11–7.16	Own T120	O4IHV	359	503	C	TX	60½	8⅜x2⅜x⅜	C
59	WHA-45		136	220	15500		6.50/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat A5-1350	SFd	H	Dual Rge.	Own T120	O4IHV	359	503	C	TX	60½	8⅜x2⅜x⅜	C
60	WHAX-45		136	220	16000		9.00/20D°	9.00/20°	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat 16500	SFd	H	Dual Rge.	Own T120	O4IHV	391	609	C	TX	60½	8⅜x2⅜x⅜	C
61	(c.o.e.), WHM-45		105	159	16000		6.50/20D	8.25/20	Own T-130	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Own T130	HyF	H	5.11–7.16	Own T130	O4IHV	359	503	C	TX	60	8⅜x2⅜x⅜	C
62	(coe) WHMA-45		105	159	16000		6.50/20D	8.25/20	Own T-130	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat A5-1350	SFd	H	Dual Rge.	Own T130	O4IHV	359	503	C	TX	60	8⅜x2⅜x⅜	C
63	(coe) WHMAX-45		105	159	16500		9.20/20D°	9.00/20°	Own T-130	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat 16500	SFd	H	Dual Rge.	Own T130	O4IHV	391	609	C	TX	60	8⅜x2⅜x⅜	C
64	WJ-55		136	235	18500		7.50/20D	9.00/20	Own T-136	6–3¾x4¼	281	6.5	225	115–3200	7–3x11.2	N	NP 39460	5	TimH100DPH	HyF	H	6.80–7.20	Tim T136	T41HV	396	609	C	TX	60½	8⅞x2⅞x⅜	C
65	WJA-55		136	235	18500		7.50/20D	9.00/20	Own T-136	6–3¾x4¼	281	6.5	225	115–3200	7–3x11.2	N	NP 39460	5	TimH300DPH	HyF	H	Dual Rge.	Tim T136	T41HV	396	609	C	TX	60½	8⅞x2⅞x⅜	C
66	WK-65		136	196	21000		8.25/20D	10.00/20	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	N	NP 39440	5	Tim L100DPH	HyF	H	6.83–7.40	TI 32500NX14	T41HV	424	666	C	TX	60½	8⅞x2⅞x⅜	P
67	WKA-65		136	196	21000		8.25/20D	10.00/20	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	N	NP 39440	5	Tim L300DPH	HyF	H	Dual Rge.	TI 32500NX14	T41HV	424	666	C	TX	60½	8⅞x2⅞x⅜	P
68	WR-65		136	196	23000		11.00/20†	11.00/20†	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	N	NP 39440	5	Tim 100DPH	HyF	H	6.83–7.80	Tim35020NX9	T41HV	486	770	C	TX	60½	8⅞x2⅞x⅜	C
69	WRA-65		136	196	23000		11.00/20†	11.00/20†	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	N	NP 39440	5	Tim 300DPH	HyF	H	Dual Rge.	Tim35020NX9	T41HV	486	770	C	TX	60½	8⅞x2⅞x⅜	C
70	Dodge (School Bus)																													
71	WF-32-S		160		14500		6.50/20D	7.50/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF	H	6.28–6.83	Own T118	O4IH	284	407	C	TX	.....	7x2¾x.21	C
72	WF-34-S		178		14500		7.00/20D	7.50/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF	H	6.28–6.83	Own T118	O4IHV	284	407	C	TX	.....	7⅛x2⅜x¼	C
73	WF-36-S		200		14500		7.50/20D	7.50/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF	H	6.28–6.83	Own T118	O4IHV	284	407	C	TX	.....	7⅛x2⅜x¼	P
74	WH-49-S		220		16000		7.50/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Own T120	HyF	H	6.28–7.16	Own T120	O4IHV	359	503	C	TX	.....	8⅜x2⅜x⅜	P
75	WJ-59-S		235		18500		9.00/20D	9.00/20	Own T-136	6–3¾x4¼	282	6.5	225	115–3200	7–3x11.2	N	NP 39460	5	TimH100DPH	HyF	H	6.8–7.2	Tim32525NX1	T41HV	396	609	C	TX	.....	8⅞x2⅞x⅜	P

■ Includes cab. † Dual Rear Only: Front 10.00/20. °—Rear only: front 8.25/20. □ Chevrolet own rear axle (5.43:1) available at extra cost on Models QJ-QK-QL. Chevrolet own 2-speed rear axle (6.13-8.10:1) ava lable at extra cost on Models QVS-QWS-QP-QR-QS-QV-QW-QX. ♦ Max. gross vehicle weight can only be obtained by adding regular production options (at extra cost). ▽ With Spi 703A with 3 forward speeds.
‡ Front only: Rear 6.50/20S. ▲ Rear 7.00/16S. • Own Loadmaster engine available on models QJ-QK-QL at extra cost §—Rear only; front 7.50/20.
▲ Sleeper cab models available in 25-27-28 Series with 25 inch longer wheelbase. ‡—1 Front 1.307x1.520; 3 Center .865x1.520; 1 Rear 1.498x2.00.
♦ ♦ Diameter: Front, 2.6870; Front Center, 2.7180; Rear Center, 2.7490; Rear, 2.7800; Total length, 5⅞.

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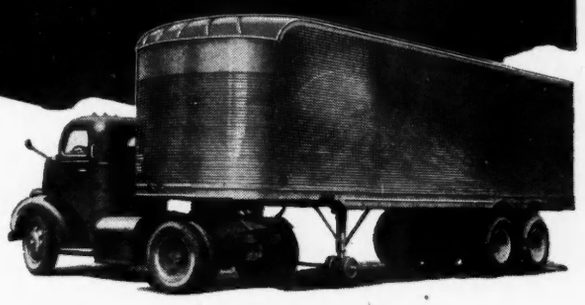
Figure Your Own Extra Earnings WITH FRUEHAUF STAINLESS STEEL TRAILERS

By substituting your own figures in this example, you can easily determine the saving Stainless Steel Trailers would mean to you on your own operation.



	Average Figures	Fill in Your Figures Here
Average Net Weight of Ordinary Steel 32′ Tandem-Axle Van	10,680	.....
Average Net Weight of Stainless Steel 32′ Tandem-Axle Van	9,635	9,635*
EXTRA PAYLOAD WITH STAINLESS STEEL	1,045	.....
What This Means in Money		
Average Rate per 100 lbs. of freight	.40	.....
EXTRA REVENUE EARNED PER LOAD	$4.17	$.....
Loads Per Week	10	
EXTRA REVENUE PER WEEK	$41.70	$.....
Weeks Operating Per Year	50	.....
EXTRA REVENUE PER YEAR	$2,085.00	$.....
Multiply this extra yearly revenue by the conservative life expectancy of 10 years	10	10
LONGER EARNING LIFE AMOUNTS TO	$20,850.00	$.....

* Call Fruehauf Branch for weight of other sizes.

EXTRA SAVINGS NOT INCLUDED ABOVE

The average repair cost of 178 Stainless Steel Trailers (all six years old or older) for 1946 was $53.48. This figure is exclusive of wrecks and floors.

Also

With Stainless Steel you eliminate painting costs — Add this figure to your savings!

THIS ADDS UP TO *Fruehauf Stainless Steel Trailers are Today's Best Buy!*

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER COMPANY • DETROIT 32

10 Factories — 66 Factory Service Branches

FRUEHAUF TRAILERS "ENGINEERED TRANSPORTATION"

(Turn to Page 104, Please)

(Continued from Page 102)

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	TRANSMISSION Forward Sp'ds	REAR AXLE Make and Model	REAR AXLE Gear and Type	REAR AXLE Drive & Torque	REAR AXLE Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Area	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME Side Rail Dimensions	FRAME Type
1	Duplex.....T	.....	136	220	18000	6600	8.25/20	9.00/20	Her JXD	6–4x4¼	320	6.2	240	113–3000	7–2½x10½	Y	Fu 5B330	5	Tim H100	B	H	** –6.83	Tim 32502	L4IHV	420	654	A	TX	59	9½x3½x¼	C
2	.....R	.....	136	220	25000	8820	9.00/20	10.00/20	Her WXLC-3	6–4¼x4¾	404	5.8	312	139–2600	7–2½x13¾	Y	Fu 5A43	4	Tim Q300	DF	R	6.53–8.53	Tim 35000	L4IHV	730	1016	A	TX	79¾	9½x3½x¼	C
3	.....JHA	.....	148	220	28000	9800	10.00/20D	11.00/20	Her RXB	6–4½x5⅛	501	5.4	360	121–2200	7–3x14	Y	Fu 5A620	5	Tim S200	2F	R	** –9.81	Tim 26450	W84IA	912	1311	A	TX	79	10⅛x3½x¼	C
4	.....KHA	.....	148	220	32000	10500	11.00/20	11.00/20	Her RXC	6–4½x5¾	529	5.4	395	132–2300	7–3x14¼	Y	Fu 5A620	5	Tim U-200	2F	R	** –9.81	Tim 26450	W84IA	912	1311	A	TX	79	10⅛x3½x¼	C
5	Federal.....16M	.....	146	194	13500	4460	7.50/20D	7.50/	Her JXE	6–3⅛x4¼	245	6.5	180	87–3000	7–2½x10½	N	WG-T9	4	T 53547DPH	BF	H	** –5.66	Tim 30000HX	L4IHV	310	482	a	TX	67	8¼x2⅞x¼	T
6	.....18M	.....	146	194	15000	4700	8.25/20D	8.25/	Her JXBF	6–3⅝x4¼	263	6.5	189	93–3000	7–2½x10½	N	WG T9	4	Tim E100DPH	SF	H	** –6.20	Tim 30003H	LT4IHV	314	532	a	TX	67	8¼x2⅞x¼	T
7	.....18M2	.....	146	194	15000	4830	8.25/20D	8.25/	Her JXBF	6–3⅝x4¼	263	6.5	189	93–3000	7–2½x10½	N	WG T9	8	Tim E300DPH	dF	H	6.13–8.10	Tim 30003H	LT4IHV	314	532	a	TX	67	8¼x2⅞x¼	T
8	.....25M	.....	146	194	17500	4950	8.25/20D	9.00/20D	Her JXCF	6–3⅜x4¼	282	6.5	212	102–3000	7–2½x10½	N	Cla 205VO	5	Tim H100DPH	SF	H	** –6.80	Tim 3100H	LT4IHV	346	583	a	TX	67	8¼x2⅞x¼	T
9	.....25M2	.....	146	194	17500	5100	8.25/20D	9.00/20D	Her JXCF	6–3⅜x4¼	282	6.5	212	102–3000	7–2½x10½	N	Cla 205VO	5	TimH300DPH	dF	H	6.13–8.15	Tim 3100H	LT4IHV	346	583	a	TX	67	8¼x2⅞x¼	T
10	.....29M	.....	146	194	20000	5500	9.00/20D	10.00/20	Her JXDF	6–4x4¼	320	6.5	246	102–2800	7–2½x10½	N	Cla 205V	5	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	390	654	a	TX	67	8¼x2⅞x¼	T
11	.....29M2	.....	146	194	20000	5080	9.00/20D	10.00/20	Her JXDF	6–4x4¼	320	6.5	246	102–2800	7–2½x10½	N	Cla 205V	10	Tim L300DPH	dF	H	6.32–8.22	Tim 32514H	LT4IHV	390	654	a	TX	67	8¼x2⅞x¼	T
12	.....29MA	.....	155	194	20000	5950	9.00/20D	10.00/20	Her JXDF	6–4x4¼	320	6.5	246	102–2800	7–2½x10½	N	Cla 205V†	15	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	466	820	a	TD	76	8¼x2⅞x¼	T
13	.....45M	.....	143	203	24000	8005	10 00/22D	10.00/24	Con B6427	6–4⅛x4½	427	6.4	332	133–2600	7–2⅛x13½	Y	Cla 270VO	5	Tim Q100P	SF	R	** –6.83	Tim 35011TW	TW4IA	606	933	a	TD	60½	10¼x3¼x⅛	T
14	.....45M2	.....	143	203	24000	8380	10 00/22D	10.00/24	Con B6427	6–4⅛x4½	427	6.4	332	133–2600	7–2⅛x13½	Y	Cla 270VO	10	Tim Q300P	dF	R	6.53–8.53	Tim 35011TW	TW4IA	606	933	a	TD	60½	10¼x3¼x⅛	T
15	.....55M	.....	143	203	27000	8485	11.00/22D	11.00/24	Con B6427	6–4⅛x4½	427	6.4	332	133–2600	7–2⅛x13½	Y	Cla 270VO	5	Tim S-200P	2F	R	** –7.08	Tim 36021TW	TW4IA	722	1051	a	TD	60½	10¼x3¼x⅛	T
16	.....55M2	.....	143	203	27000	8635	11.00/22D	11.00/24	Con B6427	6–4⅛x4½	427	6.4	332	133–2600	7–2⅛x13½	Y	Cla 270VO	10	Tim S300P	HyF	R	6.53–8.53	Tim 36021TW	Tw4IA	722	1051	a	TD	60½	10⅛x3¼x⅛	T
17	.....55MA	.....	155	203	27000	8765	11.00/22D	11.00/24	Con B6427	6–4⅛x4½	427	6.4	332	133–2600	7–2⅛x13½	Y	Cla 270V†	15	Tim S-200P	2F	R	** –7.08	Tim 36021TW	TW4IA	722	1051	a	TD	72½	10¼x3¼x⅛	T
18	.....60MA	.....	155	203	28000	9600	11.00/22D	11.00/24	Con 22R	6–4½x5¼	501	5.4	384	148–2400	7–2¾x14½	Y	Fu 5A65▲	15	Tim S200P	2F	R	** –7.08	Tim 36021TW	Tw4IA	722	1051	a	FX	72½	10¼x3¼x⅛	T
19	.....60M2	.....	143	203	28000	9370	11.00/22D	11.00/24	Con 22R	6–4½x5¼	501	5.4	384	148–2400	7–2¾x14½	Y	Fu 5A650	10	Tim S300P	HyF	R	6.53–8.53	Tim 36021TW	Tw4IA	722	1051	a	TX	60½	10⅛x3½x⅛	T
20	.....65M2	.....	141	201	30000	9995	11.00/22D	11.00/24	Con R6602	6–4½x5½	602	6.1	464	200–2600	7–3¼x14½	Y	Fu 5A650	10	Tim S300P	HyF	R	6.53–8.53	Tim 36000TW	Ws4IA	722	1051	a	TX	60½	10⅛x3½x⅛	T
21	.....65MA	.....	153	201	30000	10225	11.00/22D	11.00/24	Con R6602	6–4⅛x5½	602	6.1	464	200–2600	7–3¼x14½	Y	Fu 5A65▲	15	Tim S200P	HyF	R	** –7.08	Tim 36000TW	Ws4IA	722	1051	a	TX	72½	10¼x3¼x⅛	T
	Ford																														
	Light Duty																														
22	Chs. Cowl..79C	♦$826	114	114	4700	$2276	6.50/16S	6.50/16S	Own 59C	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 21C	3	Own 21C	S¾	H	** –3.78	Own 21C	O41H	162	264	Co	21	40.06	5.92x2¼x.15	T
23	Chs. Cowl..7GC	♦$768	114	114	4700	$2276	6.50/16S	6.50/16S	Own 5GC	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 2GC	3	Own 21C	S¾	H	** –3.78	Own 21C	O41H	162	264	Co	21	40.06	5.92x2¼x.15	T
24	Chs. Cowl...79Y	♦$1002	122	122	6600	$2776	7.50/17S▽	7.50/17S▽	Own 59Y	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 51Y	4	Own 21Y	SF	H	** –4.85	Own 21Y	O41H	187	308	Co	21	48.06	6x2¼x.19	T
25	Chs. Cowl..7GY	♦$944	122	122	6600	$2776	7.50/17S▽	7.50/17S▽	Own 5GY	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 51Y	4	Own 21Y	SF	H	** –4.85	Own 21Y	O41H	187	308	Co	21	48.06	6x2¼x.19	T
	Heavy Duty Dump																														
26	Chs. Cowl...79U	♦$1180	134	134	12500	$3911	7.50/20D	7.50/20	Own 59T	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	60.06	7x2¾x.21	LT
27	Chs. Cowl...7GU	♦$1122	134	134	12500	$3911	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	60.06	7x2¾x.21	LT
	Heavy Duty Truck																														
28	Chs. Cowl...79T	♦$1174	134	134	12500	$3906	7.50/20D	7.50/20	Own 59T	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	60.06	7x2¾x.21	LT
29	Chs. Cowl...7GT	♦$1116	134	134	12500	$3906	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	60.06	7x2¾x.21	LT
30	Chs. Cowl..798T	♦$1210	158	158	12500	$3986	7.50/20D	7.50/20	Own 59T	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	84.06	7x2¾x.21	LT
31	Chs. Cowl.7G8T	♦$1152	158	158	12500	$3986	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	84.06	7x2¾x.21	LT
	Heavy Duty COE																														
32	Cab Chs...791W	♦$1491	101	101	13500	$4333	7.50/20D	7.50/20	Own 59W	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01W	O41H	303	506	Co	TX	60.06	7x2¾x.21	T
33	Cab Chs...79W	♦$1535	134	134	13500	$4468	7.50/20D	7.50/20	Own 59W	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01W	O41H	303	506	Co	TX	93.06	7x2¾x.21	LT
34	Cab Chs..798W	♦$1571	158	158	13500	$4543	7.50/20	7.50/20	Own 59W	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01W	O41H	303	506	Co	TX	117.1	7x2¾x.21	LT
	Heavy Duty Dump																														
35	Chs. Cowl.79UH	♦$1467	134	134	14500	$4076	8.25/20^D	8.25/20^	Own 59T	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O41HV	303	506	Co	TX	60.06	7x2¾x.21	LT
36	Chs.Cowl.7GUH	♦$1409	134	134	14500	$4076	8.25/20^D	8.25/20^	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O41HV	303	506	Co	TX	60.06	7x2¾x.21	LT
	Heavy Duty Truck																														
37	Chs. Cowl.79TH	♦$1462	134	134	14500	$4071	8.25/20^D	8.25/20^	Own 59T	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O41HV	303	506	Co	TX	60.06	7x2¾x.21	LT
38	Chs.Cowl.7GTH	♦$1404	134	134	14500	$4071	8.25/20^D	8.25/20^	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O41HV	303	506	Co	TX	60.06	7x2¾x.21	LT
39	Chs.Cowl.798TH	♦$1498	158	158	14500	$4151	8.25/20^D	8.25/20^	Own 59T	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O41HV	303	506	Co	TX	84.06	7x2¾x.21	LT
40	Chs.Cowl.7G8TH	♦$1440	158	158	14500	$4151	8.25/20^D	8.25/20^	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O41HV	303	506	Co	TX	84.06	7x2¾x.21	LT
	Heavy Duty COE																														
41	Cab Chs.791WH	♦$1779	101	101	15000	$4498	8.25/20^D	8.25/20^	Own 59W	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01W	O41HV	303	506	Co	TX	60.06	7x2¾x.21	T
42	Cab Chs..79WH	♦$1823	134	134	15000	$4633	8.25/20^D	8.25/20^	Own 59W	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01W	O41HV	303	506	Co	TX	93.06	7x2¾x.21	LT
43	Cab Chs.798WH	♦$1859	158	158	15000	$4708	8.25/20^D	8.25/20^	Own 59W	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01W	O41HV	303	506	Co	TX	117.1	7x2¾x.21	LT
	School Bus																														
44	Cowl Chs.,.798T	♦♦$1260	158	158	13500	$3970	7.50/20D	7.50/20	Own 59T	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	.....	7x2¾x.21	T
45	Cowl Chs..7G8T	♦$1202	158	158	13500	$3970	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	.....	7x2¾x.21	T
46	Cowl Chs.,.794T	♦$1353	194	194	14500	$4140	7.50/20D	7.50/20	Own 59T	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	.....	7x2¾x.21	LT
47	Cowl Chs..7G4T	♦$1295	194	194	14500	$4140	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O41H	303	506	Co	TX	.....	7x2¾x.21	LT
48	Hudson (¾T. Pkp).....	.....	128	128	4810	.....	6.50/16-6	6.50/16-6	Own 178	6–3x5	212	6.5	168	102–4000	3– ▲▲	N	Own	3	Own	S½	H	** –4.55	Own	B4IH	141	242	C	2I	42½	7½x1¾x⅜	B
49	Intern'l (2)...KB-1	800	113	125	4400	2190	6.00/16-4	7.00/16	Own GRD214	6–3⅞x4½	213	6.3	160	82–3400	4–2⅛x6½	N	Own HDS-B	3	Own R1050	S½	H	3.72–5.11	Own F50	L41H	164	316	c	FX	38	6x2¼x½	C
50	.....KB-1M	755	102	113	4600	2090	6.00/16-4	6.50/16-6	Own GRD214	6–3⅞x4½	213	6.3	160	82–3400	4–2⅛x6½	N	O SA-HDS-B	3	Own R1050	S½	H	3.72–5.11	Own F150	L4IH	164	316	c	FX	.....	6½x2¼x½	C
51	.....KB-2	840	125	125	5200	2225	6.00/16-4	7.00/16-6	Own GRD214	6–3⅞x4½	213	6.3	160	82–3400	4–2⅛x6½	N	Own HDS-B	3	Own R1050	S½	H	3.72–5.11	Own F50	L4IH	164	316	c	FX	50	6⅜x2¼x⅜	C
52	.....KB-3	980	130	....	6650	2970	7.00/16-6	7.50/16-6	Own GRD214	6–3⅞x4½	213	6.3	160	82–3400	4–2⅛x6½	N	Own HDS-B	3	Own R1150	SF	H	4.22–5.28	Own F150	L4IH	195	367	c	FX	55	6½x2⅝x½	C
53	.....KB-3M	905	102	113	7000	2525	7.00/16-6	7.50/16-8	Own GRD214	6–3⅞x4½	213	6.3	160	82–3400	4–2⅛x6½	N	Own H41B	4	Own R1150	SF	H	4.22–5 .28	Own F150	L4IH	221	367	c	TX	.....	6½x2¼x½	C
54	(a).....KB-5	1130	135	177	13500	3630	6.50/20D	8.25/20	O-GRD 233	6–3⅞x4½	233	6.3	181	93–3400	4–2⅛x6½	N	Own H41B	4	Own R1360	SF	H	5.28–7.16	Own F350	LH4IH	294	509	c	TX	60	8x3x⅞	T
55	(a).....KB-6	1575	134	176	14500	4530	7.00/20D	8.25/20	Own BLD250	6–3⅞x4½	251	6.3	200	100–3200	4–2⅝x5½	N	Own WT97A	5	Own R1450	SF	H	5.62–7.16	Own F470	LH4IHV	305	539	c	TX	60	8¼x3x⅜	T
56	(a).....KB-7	2000	134	176	16500	4960	7.50/20D	9.00/20	O-BLD 269	6–3⅞x4½	269	6.3	222	100–3000	4–2.7x⅜	N	Own F51	5	Own R1560	SF	H	6.50–7.16	Own F470	LH4IHV	368	633	c	TX	60	8¼x3x⅜	T
57	(a).....KB-8	3050	137	197	20000	6485	9.00/20D	10.00/20	O-RED 361	6–4½x4½	361	6.3	282	126–3000	7–3¼x10½	Y	Own F51	5	Own R1572	SF	H	6.43–8.51	Own F552	LH4IHV	407	709	c	PX	60	8½x3½x½	T
58	(a).....KB-10	3900	149	197	22500	7310	10.00/20D	11.00/20	Own RED401	6–4½x5	401	6.3	318	140–2800	7–3¼x10½	Y	Own F52	5	Own R1676	SF	H	6.43–8.05	Own F653	LH4IHV	484	829	c	FX	72	9¼x3½x⅜	T
59	(a).....KBR-11	5400	149	197	27000	8335	10.00/20D	12.00/20	O-RED 450	6–4½x5	450	6.3	360	148–2600	7–3¼x10½	Y	Own F54	5	Tim S200P	2SF	H	6.42–8.05	Own F750	WW4IA	616	1030	G	PX	72	10x3½x⅜	T
60	.....KBR-12	6650	155	179	28500	9950	11.00/20	12.00/20	O-Con. R6596	6–4½x5¾	586	6.0	475	200–2600	7–3¼x13½	Y	Own F55	5	Tim S200P	2F	H	** –6.42	Own F750	BW4IA	746	....	G8	FX	66	10x3½x⅜	C
61	.....W-3042-H	9900	179	227	30000	12140	10.00/20	11.00/22	O-Con. S6749	6–5⅝x5½	749	6.0	554	254–2600	7–3¾x15¾	Y	Spi 7741	4	Tim S200P	2F	H	** –6.42	Own 86303	BW4IA	690	....	G	TX	84	10x3½x⅜	C
62	Kenworth(D)..521	.....	161	215	35000	12200	10 00/20	11.00/22	Cum HB6	6–4½x6	672	17.	500	150–1800	7–4½x16½	Y	BL 7841	4	Tim U200P	DR	H	6.42–7.84	Tim 36000TW	W84IA	752	1050	a	TD	72	9½x3¼x⅜	C
63	(D).....522	.....	187	245	43000	12900	10.00/20	11.00/22	Cum HB6	6–4½x6	672	17.	500	150–1800	7–4½x16½	Y	BL 7841	4	Tim U200P			.....	Tim 36000TW	W84IA	1135	.....	.....	.....	.....	9½x3¼x⅜	.....
64	587	.....	150	215	30000	10130	10.00/20	11.00/22	Bu LO525	6–4½x5½	525	5.5	385	150–2200	7–3x11½	Y	Fu 5A620	5	Tim U200P			.....	Tim 35100TW	W84IA	752	.....	.....	.....	.....	9½x3¼x⅜	.....
65	Mar. Her...DVL-1	.....	90	118	8200	4200	7.50/16S	8.25/18S	Willys MB	4–3⅛x4⅛	134	6.4	105	60–4000	3–2.33x5.48	Y	Own	3	(Front Drive)	.....	.....	7.10	Own	41H	202	327	M2	.....	.....	None	.....

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‡ List price of vehicle to nearest dollar. * For shorter wheel bases—10x3½x¼. ▲ Auxiliary trans. Spicer 703F, three forward speeds. ▽ Rear Only; Front 7.00/17. △ Rear Only; Front 7.50/20. ▲▲ Diameter front 2.343, Center 2.375, Rear 2.406. $ Weight of complete vehicle with 5 gal. of gas. ‡ For shorter wheel bases 8½x27⅞x7/32. Total length 5.750. † Auxiliary trans. Spicer 6231B, three forward speeds. ■ Two speed rear axle with vacuum shift and power braking. ▲ On 146" and 155" wheel bases, thickness is ⅜". ^ Rear Only; Front 8.25/20.

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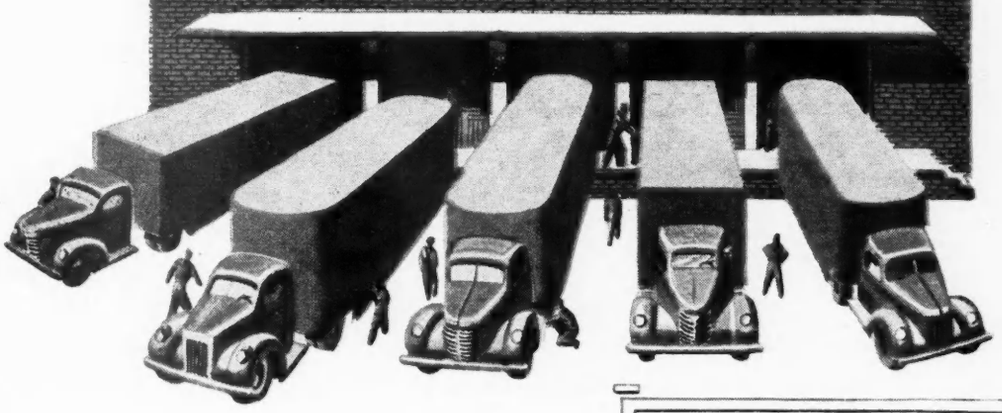

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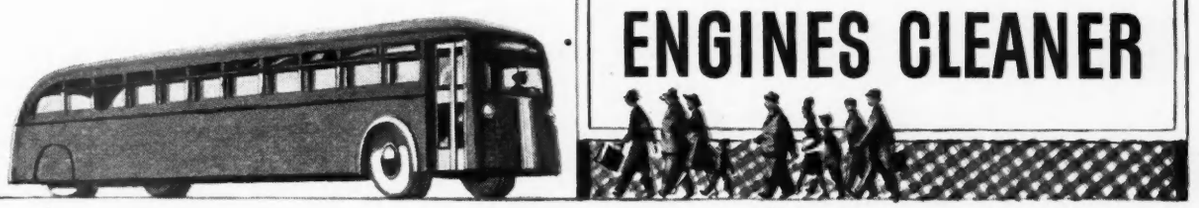

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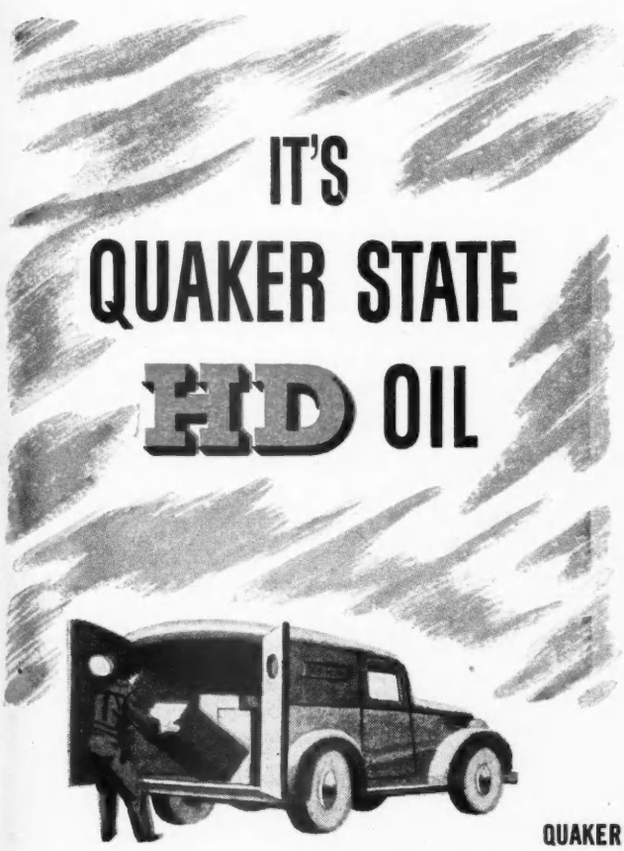

If running a fleet of trucks or buses is your job, you are under pressure to hold down capital investment. That means you must get the utmost mileage out of each vehicle without endangering safety. How are you going to do it? Two things will help:

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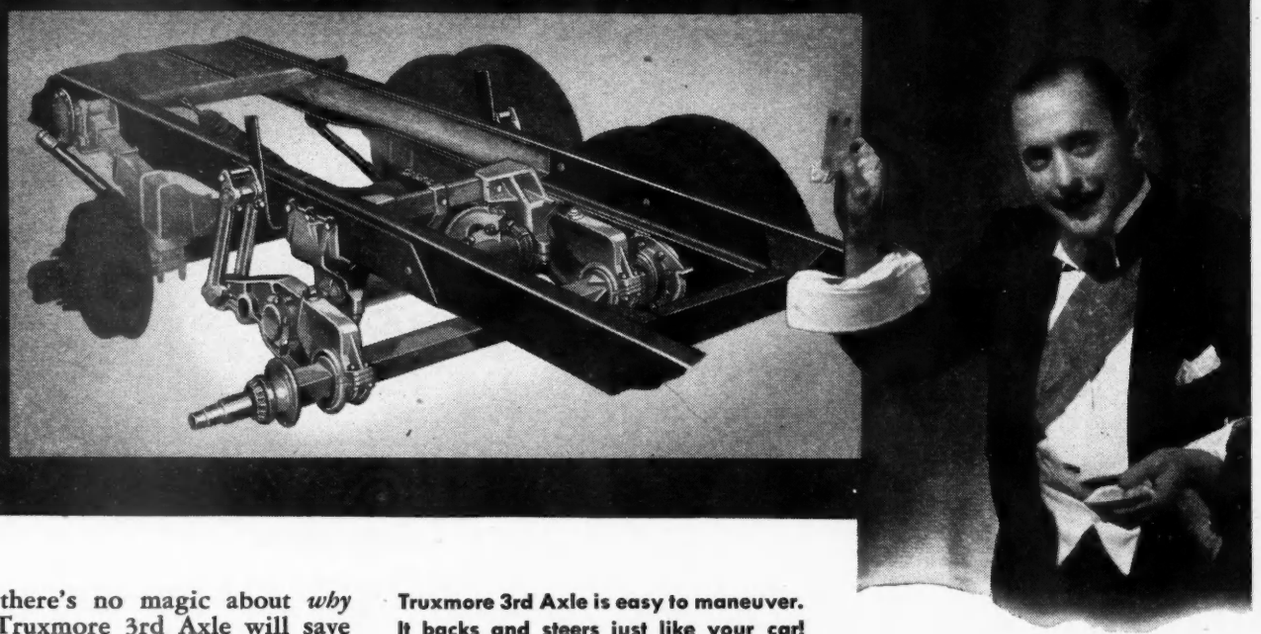
(Continued from Page 104)

Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE Minimum Standard	WHEELBASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	TRANSMISSION Forward Sp'ds	REAR AXLE Make and Model	REAR AXLE Gear and Type	REAR AXLE Drive & Torque	REAR AXLE Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operation	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Area	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	C-A Dimensions (Min. Std. W. B.)	FRAME Side Rail Dimensions	FRAME Type
1	Reo.....19A	.....	125	125	14000	▲4840	7.50/20	8.25/20	Own GC245	6–3½x4¼	245	6.2	191	89–3100	7–2⅝x10.7	Y	WG T97	4	Tim 53000	SBF	H	5.66–6.16	Tim 30000	T 4IVH▼	311	483	Co	TX	64⅝	8½x2½ x⅝	T
2	.....19AT	.....	125	125	14000	▲5280	8.25/20	8.25/20	Own GC245	6–3½x4¼	245	6.2	191	89–3100	7–2⅝x10.7	Y	WG T97	4	Tim 53000	SBF*	H	6.03–8.00	Tim 30000	T 4IVH▼	311	483	Co	TX	64⅝	8½x2½ x⅝	T
3	.....19B	.....	145	145	14000	▲5000	7.50/20	8.25/20	Own GC245	6–3½x4¼	245	6.2	191	89–3100	7–2⅝x10.7	Y	WG T97	4	Tim 53000	SBF*	H	5.66–6.16	Tim 30000	T 4IVH▼	311	483	Co	TX	84⅝	8½x2½ x⅝	T
4	.....19C	.....	165	165	14000	▲5040	8.25/20	8.25/20	Own GC245	6–3½x4¼	245	6.2	191	89–3100	7–2⅝x10.7	Y	WG T97	4	Tim 53000	SBF*	H	5.66–6.16	Tim 30000	T 4IVH▼	311	483	Co	TX	104⅝	8½x2½ x⅝	T
5	.....21T	.....	130	130	18000	▲6380	9.00/20	9.00/20	Own GC288	6–3½x5	288	6.2	225	96–3000	7–2⅝x10.7	Y	Cla 205V	5	Tim 55000	dF	H	6.08–8.12	Tim 31000	T 4IVH▼	344	583	Co	TX	69⅝	9x3x¼	T
6	.....21B	.....	145	145	18000	▲6080	8.25/20	9.00/20	Own GC288	6–3½x5	288	6.2	225	96–3000	7–2⅝x10.7	Y	Cla 205V	5	Tim 55000	SBF*	H	** –6.28	Tim 31000	T 4IVH▼	344	583	Co	TX	84⅝	9x3x¼	T
7	.....21C	.....	165	165	18000	▲6180	9.00/20	9.00/20	Own GC288	6–3½x5	288	6.2	225	96–3000	7–2⅝x10.7	Y	Cla 205V	5	Tim 55000	SBF*	H	** –6.28	Tim 31000	T 4IVH▼	344	583	Co	TX	104⅝	9x3x¼	T
8	.....22T	.....	130	130	20500	▲6630	9.00/20	9.00/20	Own GC310	6–3⅝x5	310	6.2	243	101–3000	7–2⅝x10.7	Y	Cla 205V	5	Tim 96000	dF	H	6.08–8.12	Tim 31000	T 4IVH▼	344	583	Co	TX	69⅝	9¼x3⅛x¼	C
9	.....22B	.....	145	145	20500	▲6410	9.00/20	9.00/20	Own GC310	6–3⅝x5	310	6.2	243	101–3000	7–2⅝x10.7	Y	Cla 205V–VO	5	Tim 76000	2F	H	6.16–7.3	Tim 31000	T 4IVH▼	344	583	Co	TX	81⅝	9¼x3⅛x¼	C
10	.....22C	.....	165	165	20500	▲6380	9.00/20	9.00/20	Own GC310	6–3⅝x5	310	6.2	243	101–3000	7–2⅝x10.7	Y	Cla 205V	5	Tim 56000	SBF	H	** –6.16	Tim 31000	T 4IVH▼	344	583	Co	TX	104⅝	9¼x3⅛x¼	C
11	.....22L	.....	185	185	20500	▲6380	9.00/20	9.00/20	Own GC310	6–3⅝x5	310	6.2	243	101–3000	7–2⅝x10.7	Y	Cla 205V	5	Tim 56000	SBF	H	** –6.16	Tim 31000	T 4IVH▼	344	583	Co	TX	124⅝	9¼x3⅛x¼	C
12	.....23T	.....	130	130	23000	▲8180	10.00/20	10.00/20	Con B6371	6–4½x4⅝	371	6.0	279	100–2600	7–2½x13½	Y	Cla 270VO	5	Tim 98415	dF	H	6.53–8.53	Tim 32000	Ws4IA	514	747	G	TX	69⅝	9¼x3⅛x¼	C
13	.....23B	.....	145	145	23000	▲7380	10.00/20	10.00/20	Con B6371	6–4½x4⅝	371	6.0	279	100–2600	7–2½x13½	Y	Cla 270VO	5	Tim 72000	2F	H	** –8.4	Tim 32000	T 4IVH▼	370	644	G	TX	84⅝	9¼x3⅛x¼	C
14	.....23L	.....	185	185	23000	▲7510	10.00/20	10.00/20	Con B6371	6–4½x4⅝	371	6.0	279	100–2600	7–2½x13½	Y	Cla 270VO	5	Tim 58000	SBF	H	** –7.8	Tim 32000	T 4IVH▼	370	644	G	TX	124⅝	9¼x3⅛x¼	C
15	.....25T	.....	130	130	27400	▲8660	10.00/20	10.00/20	Con B6427	6–4¼x4⅞	427	5.9	324	127–2700	7–2½x13½	Y	Cla 270V–VO	5	Tim 98415	dF	H	6.53–8.53	Tim 35000	Ws4IA	514	744	G	TX	69⅝	9¼x3⅛x¼	C
16	...25BL & 25BT	.....	145	145	27400	▲9360	10.00/20	10.00/20	Con B6427	6–4¼x4⅞	427	5.9	324	127–2700	7–2½x13½	Y	Cla 270VO‖	15	T-S-200P	2F	H	** –7.84	Tim 35000	Ws4IA	660	952	G	TD	84⅝	9¼x3⅛x¼	CP
17	.....25B	.....	145	145	27400	▲8570	10.00/20	10.00/20	Con B6427	6–4¼x4⅞	427	5.9	324	127–2700	7–2½x13½	Y	Cla 270VO	5	T-S-200-P	2F	H	** –7.84	Tim 35000	Ws4IA	660	952	G	TX	84⅝	9¼x3⅛x¼	C
18	.....25L	.....	185	185	27400	▲8700	10.00/20	10.00/20	Con B6427	6–4¼x4⅞	427	5.9	324	127–2700	7–2½x13½	Y	Cla 270V	5	T-S-200-P	2F	H	** –7.84	Tim 35000	Ws4IA	660	952	G	TX	124⅝	9¼x3⅛x¼	C
19	Sterling....HD97	.....	148	175	24000	9150	9.00/20	11.00/20	Wau 6MZA	6–4⅛x4¾	404	5.6	290	130–3000	7–2⅝x12½	Y	Fu 5A43	5	Tim Q100DPH	FHy	R	5.29–7.80	Tim 35011H	T4IHV	466	822	A	TX	67	9x7x¼	A
20	.....HD105	.....	148	175	24000	9550	10.00/20	11.00/22	Wau 6MZA	6–4⅛x4¾	404	5.6	290	130–3000	7–2⅝x12½	Y	Fu 5A43	5	Tim R100DPH	FHy	R	5.29–7.40	Tim 35011H	T4IHV	524	926	A	TX	67	9x3¼x¼	A
21	.....HD115	.....	148	175	32000	10650	10.00/20	11.00/24	Wau 6SRKR	6–4½x5½	517	5.5	368	125–2250	7–3x13⅛	Y	Fu 5A62	5	Tim 8200P	2F	R	7.77–8.53	Tim 36000TW	Ws4IA	722	1054	A	TX	67	9¼x3⅝x¼	A
22	.....HD145	.....	148	175	36000	11250	11.00/20	12.00/24	Wau 6SRKR	6–4½x5½	517	5.5	368	125–2250	7–3x13⅛	Y	Fu 5A62	5	Tim 79721W	2F	R	7.69–11.36	Tim 36000TW	Ws4IA	614	922	A	TX	67	9¼x3⅝x⅜	A
23	(D)....HD115H	.....	158	185	32000	11950	10.00/20	11.00/24	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86	4	Tim 8200P	2F	R	7.77–8.53	Tim 36000TW	Ws4IA	722	1054	A	TX	68	9x3½x¼	A
24	(D)....HD145H	.....	158	185	36000	12550	11.00/20	12.00/24	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86	4	Tim 79721W	2F	R	7.69–11.36	Tim 36000TW	Ws4IA	614	922	A	TX	68	9¼x3⅝x⅜	A
25	.....HC97	.....	148	175	24000	9200	9.00/20	11.00/20	Wau 6MZA	6–4¼x4¾	404	5.6	290	130–3000	7–2⅝x12½	Y	Fu 5A43	5	Own 97H	CS	R	6.70–10.82	Tim 35011H	T4IHV	540	842	A	TX	67	9x7x¼	A
26	.....HC105	.....	148	175	28000	9700	10.00/20	11.00/22	Wau 6MZA	6–4¼x4¾	404	5.6	290	130–3000	7–2⅝x12½	Y	Fu 5A43‡	15	Own 137H	CS	R	6.70–10.82	Tim 35011H	TL4IHV	540	842	A	TX	67	9x3¼x¼	A
27	.....HC115	.....	148	175	32000	10350	10.00/20	11.00/24	Wau 8SRKR	6–4½x5½	517	5.5	368	125–2250	7–3x13⅛	Y	Fu 5A62‡	15	Own 137W	CS	R	6.70–10.82	Tim 36000TW	Ws4IA	648	974	A	TX	67	9x3¼x¼	A
28	.....HC144	.....	148	175	36000	11250	10.00/22	12.00/24	Wau 6SRKR	6–4½x5½	517	5.5	368	125–2250	7–3x13⅛	Y	Fu 5A62‡	15	Own 148W	CS	R	6.70–10.82	Tim 36000TW	Ws4IA	708	1042	A	TX	67	9¼x3⅝x⅜	A
29	.....HC147	.....	148	175	36000	11500	10.00/22	12.00/24	Wau 6SRKR	6–4½x5½	517	5.5	368	125–2250	7–3x13⅛	Y	Fu 5A62‡	15	Own 147W	CS	R	6.70–10.82	Tim 36000TW	Ws4IA	708	1042	A	TX	67	9¼x3⅝x⅜	A
30	.....HC175	.....	167	185	45000	14600	12.00/24†	14.00/24‡	Wau 145GK	6–5¼x6	779	6.2	585	186–2100	7–3½x17¾	Y	Fu 4B86●	12	Own 175W	CS	R	7.31–12.42	Tim 27454W	Ws4IA	786	1152	A	TX	68	9¼x3⅝x⅜	A
31	.....HC250	.....	178	190	60000	18400	14.00/24‡	14.00/24‡	Wau 145GK	6–5¼x6	779	6.2	585	186–2100	7–3½x17¾	Y	Fu 4B86●	12	Own 251W	CS	R	7.31–12.42	Tim 27454W	Ws4IA	786	1157	A	JX	95	12x3½x3⅝	AL
32	(D)....HC115H	.....	167	185	32000	12250	10.00/20	11.00/24	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86●	12	Own 137W	CS	R	6.70–10.82	Tim 36000TW	Ws4IA	648	974	A	TX	68	9x3¼x¼	A
33	(D)....HC175H	.....	167	185	45000	14930	12.00/24†	14.00/24‡	Cum HBD600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86●	12	Own 175W	CS	R	7.31–12.42	Tim 27454W	Ws4IA	786	1152	A	TX	68	9¼x3⅝x⅜	A
34	(D)....HC250H	.....	178	190	60000	18700	14.00/24‡	14.00/24‡	Cum HBD600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86●	12	Own 251W	CS	R	7.31–12.42	Tim 27454W	Ws4IA	786	1152	A	JX	95	12x3½x3⅝	AL
35	Studebaker....M5	.....	113	113	4500	2120	6.50/16S	6.50/16S	Own 1M	6–3x4	170	6.5	134	80–4000	4–2 1/16x5 1/16	N	Own 663597	3	Own 663597	Hy	H	** –4.82	Own 664307	L4IH	157	276	Co	2I	45 11/16	7 1/16x2 1/16x 1/16	T
36	.....M15A-20	.....	120	120	7800	2960	7.00/17S	7.50/17	Own 2M	6–3x4	170	6.5	134	80–4000	4–2 1/16x5 1/16	N	Own 673674	4	Own 664435	SF	H	5.66–6.60	Own 676461	LH4IH	216	342	a	TX	52 11/16	7 1/16x2 1/16x 1/16	T
37	.....M15A-28	.....	128	128	10000	3060	7.50/17S	7.00/20	Own 2M	6–3x4	170	6.5	134	80–4000	4–2 1/16x5 1/16	N	Own 673674	4	Own 665174	SF	H	6.60–5.66	Own 676461	LH4IH	216	342	a	TX	60 11/16	8 1/16x2 1/16x 1/16	T
38	.....M16	.....	128	195	13500	3630	7.00/20D	8.25/20	Own 3M	6–3 1/16x4 1/16	226	6.5	176	94–3600	4–2 1/16x5 1/16	N	Own 674989	4	Own 665171	SF	H	5.66–6.66	Own 664452	LH4IH	280	442	Co	TX	60 11/16	8 1/16x2 1/16x 1/16	T
39	.....M16(2–Sp)	.....	128	195	15000	3955	7.00/20D	8.25/20	Own 3M	6–3 1/16x4 1/16	226	6.5	176	94–3600	4–2 1/16x5 1/16	N	Own 674989	4	Own 676055	HyF	H	Dual Rge.	Own 664452	LH4IH	280	442	Co	TX	60 11/16	8 1/16x2 1/16x 1/16	T
40	Truckstell(C) F18–5	.....	140	194	18500	▲5265	7.50/20°	10.00/20	Ford	8–3 1/16x3 1/16	239	6.4	180	100–3800	3–2½x4.71	N	Ford & BL	12	Cla R1300	SF	H	5.67–6.83	Ford	L4IHV	355	610	a	TX	65¾	7½x3x .47	CTf
41	(C).....F19–5–0	.....	108	166	19500	▲5265	7.50/20°	10.00/20	Ford	8–3 1/16x3 1/16	239	6.7	180	100–3800	3–2½x4.71	N	Ford & BL	12	Cla R1300	SF	H	5.67–6.83	Ford	L4IHV	355	610	a	TX	65¾	7½x3x .47	CTf
42	(C).....C18–5	.....	144	197	18500	▲5395	7.50/20°	9.00/20	Chevrolet	6–3 1/16x3 1/16	235	6.6	192	93–3100	4–2¾x5 1/16	N	Chev & BL	12	Cla R1300	SF	H	5.67–6.83	Chevrolet	L4IHV	355	610	a	TD	67	7½x3x .47	CTf
43	(C).....C19–5–0	.....	114	173	19500	▲5395	7.50/20°	9.00/20	Chevrolet	6–3 1/16x3 1/16	235	6.6	192	93–3100	4–2¾x5 1/16	N	Chev & BL	12	Cla R1300	SF	H	5.67–6.83	Chevrolet	L4IHV	355	610	a	TD	67	7½x3x. 47	CTf
44	Ward La Fr....D-1	.....	149	220	25000	9500	10.00/20	11.00/20	Con B6427	6–4 1/16x4⅞	427	6.1	325	127–....	7–2⅝x13½	Y	Fu 5A430	5	Tim 58415PA	B	R	** –6.14	Tim 35011TW	Ws4A	600	928	c	TM	68⅛	9⅞x3x⅛	....
45	.....D-1B	.....	149	220	25000	9500	10.00/20	11.00/20	Con 22R	6–4 1/16x5¼	501	5.4	384	148–....	7–2¾x14½	Y	Fu 5A620	5	Tim 58415PA	B	R	** –6.14	Tim 35011TW	Ws4A	600	928	c	TM	68⅛	9⅞x3x⅛	....
46	.....D-1C	.....	149	220	29000	9500	11.00/20	11.00/24	Con B6427	6–4 1/16x4⅞	427	6.1	325	127–....	7–2⅝x13½	Y	Fu 5A430	5	Tim S-200P	S2	R	** –7.84	Tim 35011TW	Ws4A	673	1031	c	TM	68⅛	9⅞x3x⅛	....
47	.....D-2	.....	149	220	29000	12000	11.00/20	11.00/24	Con R6513	6–4½x5½	513	5.9	400	170–....	7–3¼x14½	Y	Fu 5A620	5	Tim S-200P	S2	R	** –7.84	Tim 35011TW	Ws4A	673	1031	c	TM	68⅛	10x3x 1/16	....
48	.....D-3	.....	149	220	34000	12000	11.00/22	12.00/24	Con R6572	6–4½x5½	572	5.9	440	189–....	7–3¼x14½	Y	Fu 5A650	5	Tim U200P	S2	R	** –7.84	Tim 26458W	Ws4A	750	1159	c	TM	68⅛	10x3x 1/16	....
49	(D).....D-5	.....	149	149	35000	12500	11.00/22	12.00/24	Cum HB600	6–4⅞x6	672	17.	500	150–....	7–4½x16¾	Y	Fu 5A650	5	Tim U200P	S2	R	** –6.42	Tim 26458W	Ws4A	750	1159	c	TM	68⅛	10x3x 1/16	....
50	Willys (Sd.Del.)463	1285♦	104	104	4000	‡2752	6.50/15S	.....	Own 463	4–3½x4⅜	134	6.5	105	63–4000	3–2.33xb 48	N	WG T96	3	Spl 23–1	Hy‖	H	4.88–5.38	Own I Tr	B4IH	133	220	a	2I	....	5x2½x.063	TfD
51	Willys.....2T	1195♦	118	118	5300	‡2788	6.50/16S	7.00/16S	Own 2T	4–3½x4⅜	134	6.5	105	60–4000	3–2.33x5.48	N	WG T90E	3	Tim51540NX2	S‖	H	5.38–6.17	Cla F-154	B4IH	176	276	a	2I	42.28	5½x2x 1/16	TD
	Four-Wheel-Drive																														
52	Corbitt.....22FG	.....	159	Opt	22000	.....	9.00/20	10.00/20	Con B6371	6–4½x4⅝	371	6.0	280	100–2600	7–2¼x13½	Y	Fu 5A43	5	Tim R2090H	2F	H	** –8.43	Tim F2090H	L4IHV	....	868	a	TD	74	9x3x¼	DL
53	Dodge.....WDX	.....	126	126	8700	.....	7.50/16S	9.00/16S	Own T-137	6–3¼x4⅝	230	6.7	185	94–3200	4–2½x4.8	Y	NP 38580	4	Own T137	HyF	H	4.89–5.83	Own T137	O4IH	210	311	Co	TX	52 11/16	6½x2 1/16x 1/16	T
54	FWD.....HA	.....	132	156	17000	▲7470	8.25/20D	10.00/20	Wau BZ	6–4x4¼	320	5.9	223	95–2800	7–2⅝x10¼	Y	Own H	5	Own H	SF	H	6.6 –9.06	Own H	L4IHV	391	807	a	T4	79½	9x3x¼	T
55	.....HR	.....	132	154	20000	▲8000	9.00/20	10.00/20	Wau MZA	6–4¼x4¾	404	5.	6	291	129–2800	7–2⅝x12⅝	Y	Own H	5	Own H	SF	H	6.6 –9.06	Own H	L4IHV	391	807	a	T4	79½	9x3x¼	T
56	.....HG	.....	154	154	20000	▲8050	9.00/20	10.00/20	Wau MZA	6–4¼x4¾	404	5.	6	291	129–2800	7–2⅝x12⅝	Y	Own H	5	Own H	BF	H	6.6 –9.06	Own H	L4IHV	391	807	a	T4	89⅝	7 1/16x3x 11/16	C
57	.....SU	.....	150	182	25000	▲10420	11.00/20D	12.00/20	Wau 8RKR	6–4⅝x5½	517	5.	5	365	126–2400	7–3x13⅛	Y	Own U	5	Own U	BF	H	6.7 –9.8	Own U	L4IHV	512	867	a	T4	90	7 1/16x3x 11/16	C
58	.....SU‡	.....	150	182	28000	▲10570	11.00/20D	12.00/20	Wau 8RKR	6–4½x5½	517	5.	5	365	126–2400	7–3x13⅛	Y	Own U	5	Own U	BF	H	6.7 –9.8	Own U	L4IHV	512	867	a	T4	90	8 1/16x3x 11/16	C
59	.....M7	.....	150	180	38600	▲15400	12.00/20D	12.00/20	Wau 145GK	6–5¼x6	779	6.	2	585	186–2000	7–3½x17¾	Y	Own M	10	Tim 1758	2F	H	** –7.33	Wis F409	Ws4IA	578	976	a	T4	90	10 1/16x3x 11/16	C
60	(D).....M7D	.....	150	180	38600	▲15700	12.00/20D	12.00/20	Bu DC844	6–5¼x6½	844	....		605	180–1800	7–3¾x17	Y	Own M	10	Tim 1758	2F	H	** –7.33	Wis F409	Ws4IA	578	976	a	T4	90	10 1/16x3x 11/16	C
61	(D).....M10D	.....	150	180	44000	▲16400	11.00/24D	12.00/24	Bu DC844	6–5¼x6½	844	....		605	180–1800	7–3¾x17	Y	Own M	10	Tim 79721	2F	H	** –7.7	Wis F409	Ws4IA	614	1030	a	T4	90	10 1/16x3x 11/16	C
62	Marmon-MH440-4	.....	158	170	20700	▲8700	9.00/20D	10.00/20	Her WXLC3	6–4¼x4¾	404	5.4	293	118–2800	7–2¼x13¼	Y	Fu 5A430	5	Tim R2090W	2B	H	** –8.43	Tim F2090W	W....A	584	887	e	F	72	9 1/16x3x¼	T
63	Herr..MH555-4	.....	161	173	24000	▲10200	10.00/20D	11.00/20	Her RXC	6–4⅝x5¼	529	6.3	390	131–2200	7–3x13¼	Y	Fu 5A620	5	Tim R3100W	2B	H	** –8.15	Tim F3100W	W....A	692	1039	e	F	72	10 1/16x3x 1/16	T
64	(C).....CM5-4	.....	134	134	13500	▲4847	7.50/20D	7.50/20	Ford	8–3 1/16x3 1/16	239	6.	4	176	100–3500	3–2½x4.71	N	Ford	4	Ford	8	H	** –6.67	Own M5	F....H	302	563	a	F	60 1/16	7x2 1/16x 1/16	T
65	(C).....CM6-4	.....	158	158	13500	▲4973	7.50/20D	7.50/20	Ford	8–3 1/16x3 1/16	239	6.	4	176	100–3500	3–2½x4.71	N	Ford	4	Ford	8	H	** –6.67	Own M5	F....H	303	563	a	F	84 1/16	7x2 1/16x 1/16	T
66	(C).....LD6P-4	.....	114	....	....	....	15°	15°	Ford	8–3 1/16x3 1/16	239	6.	4	176	100–3500	3–2½x4.71	N	Ford	4	Ford	8	T	** –4.11	Own O	F....H	162	....	A	F	....	....	X
67	(C).....LD6-4	.....	114	....	4700	▲2719	15°	15°	Ford	8–3 1/16x3 1/16	239	6.	4	176	100–3500	3–2½x4.71	N	Ford	4	Ford	8	H	** –4.11	Own O	F....H	162	....	A	F	40 1/16	5 1/16x2½x 1/16	T
68	(C).....OT5-4	.....	122	....	6800	▲3972	7.50/17	7.50/17	Ford	8–3 1/16x3 1/16	239	6.	4	176	100–3500	3–2½x4.71	N	Ford	4	Ford	8	H	** –4.86	Own I	F....H	186	....	A	F	48	6x2½x 1/16	T

(Turn to Page 108, Please)

▲ Includes Cab.
† Rear only; Front 11.00/24.
‡ Rear only; Front 12.00/24.
° Front only; Rear 8.25/20.
§ Auxiliary transmission, Own OJ.
● Auxiliary transmission Own FJ.
* 2-Speed Axle Available.
▼—Lockheed Type Front and Timken Dual Primary Rear Brakes.
■ 6031 Auxiliary Transmission.
♦ Complete vehicle.

PROFITS POP UP LIKE MAGIC WITH THIS NEW *Money Maker*



But there's no magic about *why* the Truxmore 3rd Axle will save money for you.

It's engineered and built to enable your standard medium or heavy-duty truck to carry *two payloads instead of one* . . . carry more payload per pound of truck.

In addition, a Truxmore 3rd Axle will help your truck perform with greater economy . . . greater safety than ever before. That's because of Gravity Spring Suspension.

This exclusive Truxmore development gives truck, load and driver a really "bumpless ride." This means more stability for the truck, less chance of damage to the load, and greater comfort for the driver.

Furthermore, a truck equipped with a Truxmore 3rd Axle is easy to maneuver. It backs and steers just like your car! No sideway! No jack-knifing! No specially trained drivers needed!

Progressive truck owners have been using Truxmore 3rd Axles on their trucks for years. Now, Truxmore engineering offers many new improvements in compact, light-weight models to fit truck bodies up to 26 feet . . . designed to handle any type job.

Your truck dealer or local Truckstell distributor will gladly point out *all* the money-saving features of the Truxmore 3rd Axle. Feel free to call on him. Or send coupon below. The Truckstell Company, Union Commerce Bldg., Cleveland 14, Ohio.

YOU SAVE MORE WAYS WITH A TRUXMORE 3RD AXLE

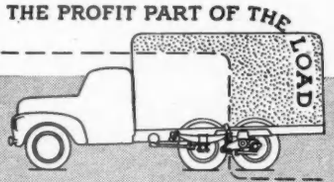
In addition to a smoother, safer ride and greater ease of handling, a Truxmore Conversion gives your medium or heavy-duty truck economies no other type truck of the same capacity can match. In fact, a Truxmore 3rd Axle can SAVE you up to:

- **40%** on original truck cost
- **50%** on insurance premiums
- **20%** on gas and oil
- **50%** on tire and replacement costs
- **20%** on road time

It carries 2 payloads instead of 1

FREE! Send today for your free copy of new illustrated folder. Tells how the Truxmore 3rd Axle will help your trucks carry two payloads instead of one!

THE PROFIT PART OF THE LOAD



TRUXMORE 3RD AXLE

Mfd. by TRUCK EQUIPMENT COMPANY, INC.
Buffalo, New York

Approved AND DISTRIBUTED BY TRUCKSTELL
SPECIALIZED EQUIPMENT FOR PLUS PERFORMANCE

Dept. CC-6
The Truckstell Company
1274 Union Commerce Bldg.
Cleveland 14, Ohio

Tell me more about the Truxmore 3rd Axle, and how it will enable my_____(make) trucks to earn more money.
Send free folder and name of my nearest Truckstell distributor.

Name_____

Address_____

City_____ Zone____ State_____

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(Continued from Page 106)

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	TRANSMISSION: Forward Sp'ds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make	BRAKES SERVICE: Location Type Operat'n	BRAKES SERVICE: Lining Area	BRAKES SERVICE: Drum Area	BRAKES SERVICE: Drum Material	BRAKES: Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
1	Oshkosh....W-307		149	204	23600	10200	10.00/20	11.00/20	Her WXLC3	6–4¼x4¼	404	6.3	310	118–2500	7–2⅝x13¾	Y	Fu 5A43	5	Tim 58300	SF	H	** –7.8	Own W307	L4II	560	867	G	TX	82	8¼x3x⅜	TF
2	.....W1700		150	205	28000	11000	11.00/20D	12.00/20S	Her RXC	6–4⅝x5½	529	5.4	380	128–2200	7–3x13¾	Y	Fu 5A620	5	Own W1700	2F	H	** –6.4	Own 1700	L4IH	630	975	G	TX	82	8¼x3x⅜	TF
3	.....W-700		150	204	30000	▲12000	11.00/20	12.00/20S	Her RXCO	6–4⅛x5½	529	5.4	380	128–2200	7–3x12¾	Y	Fu 5A620	5	Own W700	2F	H	** –6.6	Own W700	L4IH	630	975	G	TX	82	10⅛x3x⅜	TF
4	.....W-703		150	204	30000	▲12200	11.00/20	12.00/20S	Her RXLD	6–4⅛x5¼	558	5.4	405	141–2200	7–3½x13¼	Y	Fu 5A620	5	Own W700	2F	H	** –6.6	Own W700	L4IH	630	975	G	TX	82	10⅛x3x⅜	TF
5	(D).....W-706		158	190	38000	▲14900	12.00/20	14.00/20S	Cum HB600	6–4½x6	672	. . .	500	150–1800	7–4½x16	Y	Fu 4A86	4	Own W906	2F	H	** –6.2	Own W906	LT4IWS	645	975	G	TX	90	10⅛x3x⅜	TF
6	.....W2200		160	181	40000	16500	13.00/20D	14.00/20S	Bu MO779	6–5½x6	779	. . .	575	188–2100	7–3¾x17	Y	Fu 4A86	12	Own W2200	2F	H	** –6.14	Own 2200	LT4IA	645	975	G	TX	90	10⅛x3½x⅜	TF
7	.....W2201		160	181	40000	16500	13.00/20D	14.00/20S	Bu MO893	6–5⅝x6	893	. . .	625	200–1800	7–3¾x17	Y	Fu 4A86	12	Own W2200	2F	H	** –6.14	Own 2200	LT4IA	645	975	G	TX	90	10⅛x3½x⅜	TF
8	Sterling....DD115		160	178	32000	11350	10.00/20	11.00/24	Wau 6SRKR	6–4⅝x5½	517	5.5	368	125–2250	7–3x13¾	Y	Fu 5A62†	10	Tim 1357W	2F	R	6.65–8.6	Tim F3110W	Ws4IA	644	984	A	TX	76	9x3¼x¼	A
9	(D).....DD145H		167	185	36000	13050	11.00/20	12.00/24	Cum HB600	6–4½x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86‡	10	Tim 1758W	2F	R	7.33–10.3	Tim F409CW	Ws4IA	644	984	A	TX	77	9¼x3⅝x3⅝	A
10	Peterbilt(D)270DD	10848	165	Opt	27000	12500	10.00/20D	11.00/22	Cum HB600	6–4¾x6	672	17.	500	150–1800	7–4½x16½	Y	Spl 7741	12	U-200P	2F	R	** –6.42	Tim 36000W	Ws4IA	800	1250	a	FD	80½	10⅜x3½x ⅋	TL
11	Walter(c.f.)....FN		126	150	20000	7500	9.00/20D	10.00/20S	Wau MZA	6–4¼x4¾	404	5.6	290	125–2600	7–2⅝x12½	Y	Own FN	6	Own FNB	2	H	6.0–8.0	Own FN	O4IA	470	670	G	FI	84	7x2¾x¼	C
12	(c.f.)..FZM		126	150	24000	8500	10.00/20D	12.00/20S	Wau MZA	6–4¼x4¾	404	5.6	290	125–2600	7–2⅝x12½	Y	Own FN	6	Own FMB	2	H	6.0–8.0	Own FJ	O4IA	470	670	G	FI	84	12x3½x1½	B
13	(c.f.)..FCK		126	138	30000	10500	10.00/24D	11.00/24S	Wau SRKR	6–4⅝x5½	517	5.5	365	125–2200	7–3x13⅞	Y	Own FC	6	Own FCB	2	H	7.5–9.0	Own FC	O4IA	585	890	D	FI	84	13x3¾x1½	B
14	(c.f.)....FC		138	162	32000	11000	11.00/24D	12.00/24S	Wau SRKR	6–4⅝x5½	517	5.5	365	125–2200	7–3x13⅞	Y	Own FC	6	Own FCB	2	H	7.5–9.0	Own FCR	O4IA	585	890	D	FI	96	14x3¾x1½	B
15	(c.f.)..FGB		126	162	32000	12000	11.00/24D	12.00/24S	Wau 145GK	6–5¼x6	779	5.7	580	185–2000	7–3½x17¾	Y	Own FA	6	Own FCB	2	H	7.5–9.0	Own FCR	O4IA	585	890	D	FI	84	14x3¾x1½	B
16	(c.f.)..FGR		126	162	42000	13000	12.00/24D	12.00/24	Wau 145GK	6–5¼x6	779	5.7	580	185–2000	7–3½x17¾	Y	Own FA	6	Own FCR	2	H	7.5–9.0	Own FCR	O4IA	585	890	D	FI	89	14x3¾x1½	B
17	Willys Unv. Jp..CJ-2A	*1146	80	80	3500	‡1646	6.00/16	7.00/15	Own CJ-2A	4–3½x4⅝	134	6.5	105	60–4000	3–2.33x5.48	N	WG T90A	3	Spl 41-2	Hy‡	H	** –5.38	Spl 25	B4IH	118	198	a	F		4x1¾x ⅋	P
	Six-Wheelers Wheels Driven ▼																															
18	Federal....663MA		189	225	40000	14500	10.00/20	10.00/22	Con R6602	6–4⅞x5⅜	602	6.1	464	200–2600	7–3¼x14½	Y	Fu 5A65▼	15	T SW3012P	WF	R	** –6.16	Tim 36000TW	Ws6IA	1082	1569	a	TD	108	10½x3½x ⅋	T
19	.....664MAB		189	225	55000	15850	11.00/22	12.00/20	Con R6602	6–4⅞x5⅜	602	6.1	464	200–2600	7–3¼x14½	Y	Spl 7741▼	12	Tim SW456P	WF	R	** –7.6	Tim 27452W	Ws6IA	1308	1888	a	TD	108	10½x3½x ⅋	T
20	.....664MA		189	225	55000	1o950	11.00/22	12.00/20	Con R6o02	6–4⅞x5⅜	602	6.1	464	200–2600	7–3¼x14½	Y	Spl 7741▼	12	Tim SD462P	BR	R	** –8.15	Tim 27452W	♦Ws6IA	1092	1624	a	TD	108	10½x3½x ⅋	T
21	F.W.D.....M6x6		243	276	58000	▲21400	11.00/24D	11.00/24	Her HXE	6–5¼x6	935	5.5	650	198–2000	7–3½x16⅝	Y	Fu 5A920	10	Wis SD462	2F	L	** –10.6	Wis F409	Ws6IA	1080	1680	a	T6	183	10 ⅋ x3x ⅋	P
22	(D).....M6X6D		180	276	58000	▲21600	11.00/24D	11.00/24	Bu DC844	6–5¼x6½	844	. . .	605	180–1800	7–3¾x17	Y	Fu 5A920	10	Wis SD462	2F	L	** –10.6	Wis F409	Ws6IA	1080	1680	a	T6	216	10 ⅋ x3x ⅋	P
23	International (2)																															
24	.....KB-6F.4R	3100	151	194	22000	6915	7.00/20D	8.25/20	Own BLD250	6–3⅞x4½	251	6.3	200	100–3200	4–2⅜x5 ⅋	N	Own F51	5	Own RF1450	SF	H	6.16–6.66	Own F470	LH4IHV	495	869	e	PX	77	8 ⅋ x ⅋ x ⅋	T
25	.....KB-8F.4R	4700	161	215	27000	8575	8.25/20D	9.00/20	Own RED361	6–4½x4½	361	6.3	282	126–3000	7–3¼x10 ⅋	Y	Own F52	5	Own RF1560	SF	H	6.50–7.16	Own F550	LH6IHV	644	1106	e	PX	84	9¼x3 ⅋ x3½	T
26	.....KB-11F.4R	6750	161	215	37000	10830	9.00/20D	10.00/20	Own RED450	6–4⅝x5	451	6.3	360	148–2600	7–3¼x10 ⅋	Y	Own F54	5	Own RF1670	SF	H	** –7.16	Own F760	TW6IA	738	1179	G	PX	84	10⅛x3 ⅋ x3½	T
27	.....W-4064H	12600	203	239	40000	15360	10.00/22	11.00/22	O-Con. S6749	6–5⅝x5½	749	6.0	554	254–2600	7–3¾x15⅜	Y	Spl 7741	4	Tim SW3012	WF	H	** –6.16	Own S6303	BW6IA	1168	. . .	G	FX	108	10x3½x ⅋	C
28	Ken-worth (D)523.4R		193	241	41000	14600	10.00/20	11.00/22	Cum HB6	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	BL 7841	4	Tl SW3012PA	WF	R	** –6.16	Tim 36000	Ws4rIA	924	1248	a	TD	102	9½x3¼x ⅋	C
29	(D)524.4R		193	241	54000	15100	10.00/20	11.00/22	Cum HB6	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	BL 7841	4	Tim SW452	WF	R	6.0 –7.6	Tim 36000	Ws4rIA	819	1192	a	TD	102	9½x3¼x ⅋	C
30	.....528.4R		186	234	40000	12500	10.00/20	10.00/22	Bud L0525	6–4½x5½	525	5.5	385	150–2200	7–3¼11½	Y	Fu 5A620	5	Tl SW3012PA	WF	R	** –6.16	Tim 35100	Ws4rIA	924	1248	a	TD	102	9½x3¼x ⅋	C
31	.....532.4R		186	234	35000	12500	10.00/20	10.00/22	Wau 6MZA	6–4¼x4¾	404	5.9	300	125–2500	7–2⅝x12½	Y	Fu 5A430	5	Tl SW3012PA	WF	R	** –6.16	Tim 35100	Ws4rIA	924	1248	a	TD	102	9½x3¼x ⅋	C
32	.....(D)548.4R		193	241	54000	17000	11.00/22	12.00/24	Cum HB6	6–4⅞x6	672	17.	500	150–2200	7–4½x16½	Y	BL 7841	4	Tim SD462	DR	R	** –8.15	Tim 36000	Ws4rIA	819	1192	a	TD	109	9½x3¼x ⅋	dbC
33	.....(D)552.4R		255	255	54000	20700	13.00/24	13.00/24	Cum HB6	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	BL 7841	4	Tim SD462W	WF	R	** –8.15	Tim F3200W	Ws4rIA	1109	1192	a	TD	168	9½x3¼x ⅋	dbC
34	Marmon-Herr (C).....CM5-6	2790	156	. . . .	22500	▲6673	7.50/20D	7.50/20	Ford	8–3 ⅋ x3¼	239	6.4	176	100–3500	3–2½x4.71	N	Ford	4	Timken	S	H	** –6.67	Own M5	M	503	. . . .	a	F	82 ⅋	7½x3x¼	C
35	(C).....CM6-6	2822	180	. . . .	22500	▲6710	7.50/20D	7.50/20	Ford	8–3 ⅋ x3¼	239	6.4	176	100–3500	3–2½x4.71	N	Ford	4	Timken	S	H	** –6.67	Own M5	M	503	. . . .	a	F	106¼	7½x3x¼	C
36	.....MH-555-6		260	260	37000	▲14900	11.00/20	11.00/20	Her RXC	6–4⅝x5¼	529	6.3	390	131–2200	7–3x13¼	Y	Fu 5A620	♦5	Tim SD3000	2B	H	** –8.15	Tim F3100W	Ws. .A	1092	1608	. .	F	93	10 ⅋ x3x ⅋	T
37	.....MH440-6		182	. . . .	34600	▲10600	9.00/20	10.00/20	Her WXLC3	6–4¼x4¾	404	5.4	239	118–2800	7–2½x13¼	Y	Fu 8A430	5	Tim SFD154	2B	H	** –8.43	Tim F2090W	Ws. .A	876	. . . .	C	F	96	9 ⅋ x3x¼	T
38	Oshkosh....W703		Opt	Opt	45000	16950	11.00/20D	12.00/20	Her RXLD	6–4⅜x5¼	558	5.4	405	141–2200	7–3½x13¼	Y	Fu 5A650	12	Tim SD454W	2F	H	** –6.31	Own-Tim	L6IH	1080	1625	G	TX	Opt.	10¼–3½–⅜	B
39	(D)..W1600BD		245	Opt	60000	22770	11.00/24D	12.00/24	Bu 6DC844	6–5¼x6½	844	. . .	600	180–1800	7–3¾x17	Y	Fu 4BI86	12	Tim SD462	2F	H	** –6.14	Own-Tim	LT6IA	1080	1625	G	TX	160	12⅜–3⅞–⅜	B
40	(D)§W1600BDH		267	Opt	60000	24300♦	11.00/24D	12.00/24	Bu 6DC844	6–5¼x6½	844	. . .	600	180–1800	7–3¾x17	Y	Fu 4BI86	12	Tim SD462	2F	H	** –9.82	Own-Tim	LT6IA	1080	1625	G	TX	174	12⅜–3⅞–⅜	B
41	(D)§W1602BDH		272	Opt	95000	29300	14.00/24D	14.00/24	Bu 6DC844	6–5¼x6½	844	. . .	600	180–1800	7–3¾x17	Y	Fu 4BI86	12	Tim SD472	2F	H	** –13.9	Own-Tim	LT6IA	. .	2217	G	TX	177	12⅜–3⅞–⅜	B
42	.....W1600BG		245	Opt	60000	22770	11.00/24D	12.00/24	Bu MO893	6–5⅝x6	893	. . .	625	200–1800	7–3¾x17	Y	Fu 4BI86	12	Tim SD462	2F	H	** –9.82	Own-Tim	LT6IA	1080	1625	G	TX	160	12⅜–3⅞–⅜	B
43	(D)...W1600CD		259	Opt	60000	23400♦	11.00/24D	12.00/24	Cum 6HBI	6–4⅞x6	672	. . .	500	150–1800	7–4½x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** –6.14	Own-Tim	LT6IA	1080	1625	G	TX	174	12⅜–3⅞–⅜	B
44	(D)..W1600CDS		259	Opt	60000	23700♦	11.00/24D	12.00/24	Cum 6HBIS	6–4⅞x6	672	. . .	635	200–1800	7–4½x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** –9.82	Own-Tim	LT6IA	1080	1625	G	TX	174	12⅜–3⅞–⅜	B
45	(D)..§W1600CDH		265	Opt	60000	24000♦	11.00/24D	12.00/24	Cum 6HBI	6–4⅞x6	672	. . .	500	150–1800	7–4½x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** –9.82	Own-Tim	LT6IA	1080	1625	G	TX	172	12⅜–3⅞–⅜	B
46	(D)..§W1600CDSH		267	Opt	60000	24300♦	11.00/24D	12.00/24	Cum 6HBIS	6–4⅞x6	672	. . .	635	200–1800	7–4½x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** –6.14	Own-Tim	LT6IA	1080	1625	G	TX	174	12⅜–3⅞–⅜	B
47	Peterbilt(D)344DT	13564	189	Opt	43000	16250	10.00/20D	11.00/22	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Spl 7741	12	Tim SW3012W	WF	A	6.00– 8.5	T 36000W	Ws6IA	1212	1734	a	FD	106½	10⅛x3½x ⅋	TL
48	(D).....345DT	14119	187	Opt	54000	17300	10.00/20D	11.00/22	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Spl 7741	12	Tim SW456W	WF	A	6.00–10.2	T 36000W	Ws6IA	1450	1626	a	FD	106½	10⅝x3½x ⅋	TL
49	(D).....354DT	14360	187	Opt	56000	17450	10.00/20D	11.00/22	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Spl 7741	12	Tim SW456W	WF	A	6.00–10.2	T 27454W	Ws6IA	1450	1626	a	FD	106½	10⅝x3½x ⅋	TL
50	(D).....355DT	14760	187	Opt	56000	17900	10.00/20D	11.00/22	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Spl 7741	12	Tim SD462W	2F	A	** –8.15	T 27454W	Ws6IA	1000	1626	a	FD	106½	10⅝x3½x ⅋	TL
51	Reo.....25TL		169	169	47000	▲12950	10.00/20	10.00/20	Con B6427	6–4⅛x4⅞	427	5.9	324	127–2700	7–2⅞x13 ⅜	Y	Cla 270V&■	15	T-SD-3000	2F	T	7.5	Tim 35000	Ws6IA	1020	1472	G	TD	108⅝	9⅛x3¹⅛x¹⅛	CP
52	Sterling...HBS130		164	183	32000	11000	8.25/20	10.00/20	Wau 6MZA	6–4¼x4¾	404	5.6	290	130–3000	7–2⅝x12½	Y	Fu 5A43	5	T-SBD1555DPH	SF	L	6.80–13.14	T-35011H	T6IHV	664	1134	A	TX	83	9x3¼x¼	A
53	.....HDS140		164	183	36000	11800	9.00/20	10.00/20	Wau 6MZA	6–4¼x4¾	404	5.6	290	130–3000	7–2⅝x12½	Y	Fu 5A43	5	T-SD3010PA	2F	L	6.84–10.22	T-35011TW	Ws6IA	1074	1554	A	TX	83	9x3¼x¼	A
54	.....HWS160		164	183	42000	12800	10.00/20	11.00/22	Wau 6SRKR	6–4⅝x5½	517	5.5	368	125–2250	7–3x13¼	Y	Fu 5A62	5	T-SW3010PA	WF	L	5.40–8.50	T-36000TW	Ws6IA	1082	1574	A	TX	83	9x3¼x¼	A
55	.....HWS235		182	193	52000	15700	11.00/20	11.00/24	Wau 145GK	6–5¼x6	779	6.2	585	186–2100	7–3½x17¾	Y	Fu 4B86	4	T-SW456P	WF	L	5.67–8.20	T-27454W	Ws6IA	1308	1892	A	TX	92	9¼x3⅝x3⅝	A
56	(D)...HWS160H		182	193	42000	14250	10.00/20	11.00/22	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu ¶B86	4	T-SW3012PA	WF	L	4.71–6.17	T-36000TW	Ws6IA	1082	1574	A	TX	92	9x3¼x¼	A
57	(D)...HWS235H		182	193	52000	16000	11.00/20	11.00/24	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86	4	T-SW456P	WF	L	5.66–8.20	T-27454W	Ws6IA	1308	1892	A	TX	92	9¼x3⅝x3⅝	A
58	.....HC8195		170	189	48000	15300	10.00/20	11.00/22	Wau 140GK	6–4½x5½	525	6.0	426	142–2200	7–3¼x13½	Y	Fu5A62-3A92	15	Own 195W	CD	R	6.04–7.31	T-36000TW	Ws6IA	1082	1622	A	TX	83	9¼x3¾x¾	A
59	.....HC8265		182	193	60000	17750	11.00/20	12.00/24	Wau 145GK	6–5¼x6	779	6.2	585	186–2100	7–3½x17¾	Y	Fu 4B86♦	12	Own 265W	CD	R	9.21–13.16	T-27454W	Ws6IA	1060	1732	A	JX	92	9¼x3⅝x3⅝	A
60	.....HC8297		182	193	70000	20750	12.00/24●	13.00/24△	Wau 145GK	6–5¼x6	779	6.2	585	186–2100	7–3½x17¾	Y	Fu 4B86♦	12	Own 330W	CD	R	9.21–13.16	T-27454W	Ws6IA	1280	1872	A	JX	92	9¼x3⅝x3⅝	AL
61	.....HC8330		174	187	80000	23150	12.00/24	14.00/24△	Wau 145GK	6–5¼x6	779	6.2	585	186–2100	7–3½x17¾	Y	Fu 4B86♦	12	Own 330W	CD	R	9.21–13.16	T-27454W	Ws6IA	1280	1872	A	JX	91	12x3½x3⅝	AL
62	(D)...HC8195H		182	193	48000	16000	10.00/20	11.00/22	Cum HB600	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu4B86-3A92	12	Own 195W	CD	R	6.04–7.31	T-36000TW	Ws6IA	1082	1622	A	TX	92	9¼x3⅝x3⅝	A

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▲ Includes Cab. ♦ Auxiliary transmission, Spicer 8031. §—Chassis Weights on Duals Front, Center and Rear. ‖—Hydraulic Coupling. ▼ Auxiliary transmission Spicer 703F with 3 forward speeds.
■ 6031 Auxiliary Transmission ‡ With power take-off * Complete vehicle price at Toledo without Federal Tax † Timken T76—2 speed transfer case. ‡ Timken T77—2 speed transfer case.
● Rear Only; Front 11.00/24. △ Rear Only; Front 12.00/24. ♦ Auxiliary transmission Spicer 8031.

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Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE Minimum Standard	WHEELBASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES Standard Front and Rear	TIRE SIZES D-dual rear S-single rear	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	TRANSMISSION Forward Sp'ds	REAR AXLE Make and Model	REAR AXLE Gear and Type	REAR AXLE Drive X Torque	REAR AXLE Gear Ratio in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Area	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	C-A Dimensions (Min. Std. W. B.)	FRAME Side Rail Dimensions	FRAME Type
1	Sterling Cont'd																																
2	(D) . . HCS265H		182	193	60000	18100	11.00/20		12.00/24	Cum HBD600	6–4½x6	672	17	500	150–1800	7–4½x16½	N	Ford	12	Own 265W	4	Ford	R	9.21–13.16	T-2745AW	W61A	1080	732 A	JX	92	9½x33⅜x⅜	A.
3	(D) . . HCS297H		182	193	70000	21050	12.00/24●		13.00/24▲	Cum HBD600	6–4½x6	672	17	500	150–1800	7–4½x16½	N	Ford	12	Own 330W	8	Eat 1350	R	9.21–13.16	T-2745AW	W61A	1280	872 A	JX	92	9½x33⅜x⅜	AL.
4	(D) . . HCS330H		174	187	80000	23450	12.00/24		14.00/24▲	Cum HBD600	6–4½x6	672	17	500	150–1800	7–4½x16½	N	Ford	12	Own 330W	8	Eat 1350	R	9.21–13.16	T-2745AW	W61A	1280	872 A	JX	91	12333⅛x⅜	AL.
5	Truckstell																																
6	(C) . . F2X26 2F		156	237	26000	▲5900	7.50/20		8.25/20	Ford	8–3⅛x3¾	239	6.4	180	100–3800	3–2¼x4.71	N	Ford	4	Ford	S	** –6.67	Ford	F6IHV	502	836c	TX	82½	7½x33x.47	CT f
7	(C) . . F2X27-0 2F		156	237	34000	▲6300	7.50/20		9.00/20	Ford	8–3⅛x3¾	239	6.4	180	100–3800	3–2¼x4.71	N	Ford	8	Eat 1350	SFd	5.83–8.11	Ford	F6IHV	502	836c	TX	82½	7½x33x.47	CT f
8	(CC) . . F2X34–0 2F		135	224	34000	▲8235	7.50/20		10.00/20	Ford	8–3⅛x3¾	239	6.4	180	100–3800	3–2¼x4.71	N	F and BL	12	Cla R1300	SF	5.67–6.83	Ford	F6IHV	605	1043a	TX	82½	7½x33x.47	CT f
9	(CC) . . F4X26 4R		144	210	26000	▲6300	7.50/20		8.25/20	Ford	8–3⅛x3¾	239	6.4	180	100–3800	3–2¼x4.71	N	Ford and BL	12	Cla R1300	SF	6.07–10.5	Ford	F6IHV	502	836c	TX	63⅜	7½x33x.47	CT f
10	(CC) . . F4X27-0		117	180	27000	▲6300	7.50/20		8.25/20	Ford	8–3⅛x3¾	239	6.4	180	100–3800	3–2¼x4.71	N	Ford	8	Ford	SF	6.07–10.5	Ford	F6IHV	502	836c	TX	63⅜	7½x33x.47	CT f
11	(CC) . . F4X29 4R		144	210	29000	▲7000	7.50/20		8.25/20	Ford	8–3⅛x3¾	239	6.4	180	100–3800	3–2¼x4.71	N	Ford	8	Ford	SFd	7.47–12.9	Ford	F6IHV	502	836c	TX	63⅜	7½x33x.47	CT f
12	(CC) . . F4X30–0		117	180	30000	▲7200	7.50/20		8.25/20	Ford	8–3⅛x3¾	239	6.4	180	100–3800	3–2¼x4.71	N	Ford	16	Eat 1350	SFd	7.47–12.9	Ford	F6IHV	502	836c	TX	63⅜	7½x33x.47	CT f
13	(CC) . . C2X26 2F		157	234	29000	▲5800	7.50/20		8.25/20	Chevrolet	6–3⅝x3¾	235	6.192	93–3100	1–2¼x3½	N	Chevrolet	4	Chevrolet	SF	** 6.17	Chevrolet	C6IHV	546	780a	21	82¼	7½x33x.47	CT f
14	(CC) . . C2X28 2F		157	234	30000	▲6500	7.50/20		8.25/20	Chevrolet	6–3⅝x3¾	235	6.192	93–3100	1–2¼x3½	N	C and BL	8	Tim	SFd	5.64–8.22	Chevrolet	C6IHV	546	780a	21	82¼	7½x33x.47	CT f
15	(CC) . . C2X34–0		141	224	34000	▲8695	7.50/20		10.00/20	Chevrolet	6–3⅝x3¾	235	6.192	93–3100	1–2¼x3½	N	C and BL	8	Cla R1300	SFd	5.67–6.83	Chevrolet	C6IHV	616	1043a	TD	82¼	7½x33x.47	CT f
16	(CC) . . C2X34 2F		157	234	34000	▲8285	7.50/20		10.00/20	Chevrolet	6–3⅝x3¾	235	6.192	93–3100	1–2¼x3½	N	C and BL	12	Cla R1300	SF	5.67–6.83	Chevrolet	C6IHV	546	780a	21	63⅜	7½x33x.47	CT f
17	(CC) . . C4X26 4R		145	212	26000	▲6120	7.50/20		7.50/20	Chevrolet	6–3⅝x3¾	235	6.192	93–3100	1–2¼x3½	N	Chevrolet	8	Chevrolet	SF	6.41–11.1	Chevrolet	C6IHV	546	780a	21	63⅜	7½x33x.47	CT f
18	(CC) . . C4X27-0		117	184	27000	▲6215	7.50/20		7.50/20	Chevrolet	6–3⅝x3¾	235	6.192	93–3100	1–2¼x3½	N	Chevrolet	8	Chevrolet	SFd	7.47–12.9	Chevrolet	C6IHV	512	836a	TD	63	7½x33x.47	CT f
19	(C) . . C4X29 4R		145	212	29000	▲6880	7.50/20		8.25/20	Chevrolet	6–3⅝x3¾	235	6.192	93–3100	1–2¼x3½	N	Chevrolet	16	Eat 1350	SFd	7.47–12.9	Chevrolet	C6IHV	512	836a	TD	63	7½x33x.47	CT f
20	(C) . . C4X30–0		117	184	30000	▲7290	7.50/20		8.25/20	Chevrolet	6–3⅝x3¾	235	6.192	93–3100	1–2¼x3½	N	Chevrolet	16	Eat 1350	SFd	7.47–12.9	Chevrolet	C6IHV	512	836a	TD	63	7½x33x.47	CT f

▲ Includes cab. ● Rear only; Front 11.00/24. ♦ Auxiliary transmission, Spicer 8031. ▲ Rear only; Front 12.00/24.

(Turn to Page 111, Please)

▲ Includes Cab. ■ 6031 Auxiliary Transmission ● Rear Only; Front 11.00/24. ♦ Auxiliary transmission, Spicer 8031. ♦ With power take-off. ♦ Complete vehicle price at Toledo without Federal Tax ♦ Timken 170—2 speed transfer case.

YOU BET YOUR LIFE

"You Bet Your Life" is the title of a new accident analysis booklet just published by the Travelers Insurance Companies, Hartford, Conn., copies of which may be obtained without charge. Most startling facts are the grand totals: 33,900 killed, 1,300,000 injured in highway accidents during 1946. Although widely heralded as a much better year than 1941, it really wasn't much better, as the comparative figures for that year show: 40,000 killed, 1,488,000 injured.

A quick glance through the several accident tables listed reveals these high-bracket percentages in various categories:

Despite a relatively high figure for youth groups, 67.9 per cent of fatal accidents and 75.5 per cent of non-fatal accidents involved drivers between the ages of 25 and 64.

85.6 per cent of fatal and 81.9 per cent of non-fatal accidents occurred in clear weather, and 78 per cent of fatal and 70.2 per cent of non-fatal accidents were on dry roads.

Passenger cars were involved in 70.7 per cent of fatal and 78.9 per cent of non-fatal accidents with 21.7 per cent and 13 per cent respectively charged to commercial vehicles.

91.7 per cent of vehicles involved in fatal accidents and 95.2 per cent of those in non-fatal accidents were "apparently in good condition."

While the highest number of accidents (16.2 per cent fatal, 9.9 per cent non-fatal) occurred between the hours of 1 and 6 A.M. the highest single hour for fatal accidents was 7 to 8 P.M. with 7.1 per cent, and for non-fatal, 5 to 6 P.M. with 8.4 per cent.

Saturday was the worst day of the week in both categories, accounting for 20.2 per cent fatal, 17.8 per cent non-fatal, while Sunday was next with 18.5 per cent and 16.0 per cent respectively.

Revised Driver's Daily Log

FORM – BMC 59 – Prescribed by the INTERSTATE COMMERCE COMMISSION, Washington, D.C.

DRIVER'S DAILY LOG
(One calendar day – 24 hours)

Form approved, Budget Bureau No. 60-R293
ORIGINAL – File each day at home terminal for one year
DUPLICATE – Driver retains in his possession for one week

May (Month) 1 (Day) 1947 (Year) 161 (Total mileage today) Tractor #123 (Vehicle or State license number)

I certify these entries are true and correct:

X.Y.Z. Transportation Co. (Name of Carrier)

John E. Doe (Driver's signature in full)

Washington, D.C. (Main Office Address)

Baltimore, Md. (Home Terminal Address)

MID-NIGHT 1 2 3 4 5 6 7 8 9 10 11 NOON 1 2 3 4 5 6 7 8 9 10 11 MID-NIGHT — Total Hours

1: OFF DUTY
2: SLEEPER BERTH
3: DRIVING
4: ON DUTY (Not Driving)

REMARKS: Washington D.C. — Baltimore Md. — Havre de Grace Md. — Ferry — Camden N.J.

Check the time and enter name of place you reported and were released from work and when and where each change of duty occurred. Explain emergencies as provided in Rule 6(b)

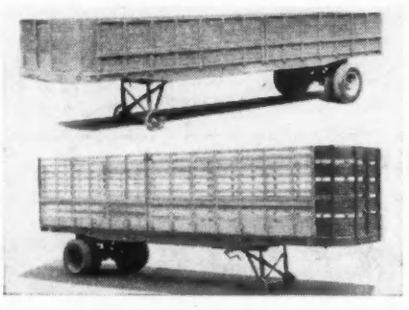
FROM: Washington, D.C. (Starting point or place)

TO: Boston, Mass. (Destination or turn around point or place)

USE TIME STANDARD AT HOME TERMINAL

Specimen copy of Driver's Daily Log recently revised and simplified by the Interstate Commerce Commission. Actual size is 7 11/16 x 5 3/16 in. Copies will not be furnished by the ICC but must be locally reproduced in the exact size indicated. Instructions may be reproduced on the back of each sheet or on either side of cover when prepared for use in book form. Note that on sample, covering first part of run from Washington to Boston, destination is given as Boston even though driver went off duty for night stop at Camden, N. J.

Trailmobile "WS" Platform



Trailomobile's new WS model platform trailer is available with either cattle rack or grain rack body. Outside rails support the load with full-depth, full-width cross-members on 24-in. centers. The Timken axle has a rating of 18,000 lb. Six-in. vacuum brakes are standard, air brakes optional. Corrugated steel front section of cattle rack body may be folded back

New Extra Heavy-Duty Mack Model LTSW Designed for Far-Western Operations

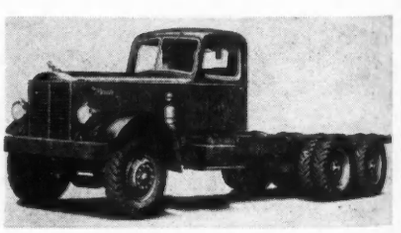
A NEW extra heavy-duty 6-wheeler, primarily developed for far-western operation, has been announced by Mack Trucks, Inc. Model LTSW is the highway model, available either as straight truck or tractor. Model LTSW-L is a modified version to meet the demands of off-highway duty.

Standard engine is the Mack EN 707A Thermodyne, developing 196 hp. at conservative speeds. For exceptional conditions requiring unusual power or for use with butane fuel, the Hall-Scott series 400 engines are supplied, furnishing horsepower ratings close to the 300 mark.

Standard transmission is the 10-speed Mack TRD 15 duplex. For extremely difficult operations where a still wider ratio range is desired, a mid-ship mounted auxiliary transmission is offered for use in conjunction with the Mack TR 15 five-speed transmission.

Exceptional stability and full-tracking are claimed for the heavy-duty bogie, and a Mack power-divider serves as a third or inter-axle differential. Dual reduction axles employ the Mack tetrapoid spur gear design for reduction and orthopoid bevel pinion gears for change in direction.

In addition to the standard air brake system, an emergency air system is provided which includes separate air chambers on each of the bogie wheels and separate reservoir and valve system. Capacity of this emergency system is sufficient for several stops. More than 1000 sq. in. of braking area is made possible by use of smaller-diameter, wider rear brakes. Parking brake is of the four-shoe, disc type mounted on driveshaft.



New Mack Model LTSW, available with either Mack or Hall-Scott engine

The pressed channel frame is braced by two box-girder crossmembers, three channel crossmembers and one fabricated I-beam.

Cab is designed for three-man crew with fully-adjustable individual driver's seat.

TRUCKERS AGREE:

"You put SAFETY FIRST when you ride on Armstrong Rhino-Flex Tires!"

Truckers Praise Safety Qualities of Armstrong's New *Rhino-Flex* Truck Tires with Rayon Cord

NOW—you can roll your trucks on the safest tires ever built by Armstrong, leading truck tire manufacturers since 1912.

Armstrong engineers have developed a truck tire with a carcass that's *tough* as a rhino's hide—yet flexible enough to "give" with road shocks—and snap back for more. That's why the new *Rhino-Flex* Armstrong Tire wears more evenly, longer—is *safer!*

Today, this great new truck tire, with tougher, tighter twisted rayon cord, is available at Armstrong dealers coast to coast. See it—compare it with any truck tire, regardless of price. You'll choose Armstrong for its safety, strength, flexibility, cooler running.

ARMSTRONG Rhino-Flex TIRES

Manufacturers of Quality Tires and Tubes Since 1912 • General Offices and Plant—400 Elm Street, West Haven 16, Conn.

Fleetman's Library

A Review of Booklets and Catalogs Fleetmen will Find Helpful

WIRE AND CABLE CATALOG No. 10, a 28-page, illustrated publication listing various types and sizes of cables, battery terminals, ignition sets, trouble lights wrenches, tools and accessories manufactured by the Clark Cable Corp. Write the company at 11205 Berea Road, Cleveland 2, Ohio, for a free copy.

FAN BELT, RADIATOR HOSE SPECIFICATIONS, a new 42-page booklet describing features and specifications for fan belts and radiator hose for trucks, busses and passenger cars. Available from the B. F. Goodrich Co., Akron, Ohio.

GLOBE AUTOMOTIVE HOISTS, CATALOG No. 46, a 40-page, book featuring more than 30 models of hydraulic and electric powered lifts designed for installation in fleet repair shops. This illustrated catalog is now available from Globe Hoist Co., Des Moines, Iowa and Philadelphia, Pa. (Mermaid Lane and Queen St.)

1947 SAE HANDBOOK, published by the Society of Automotive Engineers, which now makes available war-developed data and new standards plus material revised from 36 prior editions. Featured among the new data are the first specifications for hydraulic brake fluids. Price to non-members, $10 per copy. Write SAE at 29 W. 39th st., New York 18, N. Y.

REPLACEMENT AXLE BULLETIN, listing sizes and application of heavy-duty replacement axles for certain Army trucks. Available from The U. S. Axle Co., Inc., Pottstown, Pa.

NEW ARROW CATALOG, covering Arrow's complete line of fog lights, markers, reflectors and other items, with a full description of each, listing voltage, candlepower and other specifications. Write Arrow Safety Device Co., Mount Holly, N. J.

BUILDING MATERIALS CATALOG, a 32-page ready reference of materials for every phase of building maintenance. The booklet outlines specific maintenance problems and explains how each product may be used to solve these problems. Write the Continental Asbestos & Refining Corp., 1 Madison Ave., New York 10, N. Y.

HYDRAULIC POWER STEERING BOOKLET, an 8-page, illustrated publication showing construction, mounting and advantages of the Vickers power steering system. Write for Bulletin 47-30. Attention M. A. Hayden, Sales Engineer, Vickers, Inc., 1400 Oakman Blvd., Detroit 32, Mich.

PEDRICK REPAIR MANUAL

A new 108-page Engine Repair Manual, devoted entirely to heavy-duty engines for trucks and buses, is announced by Wilkening Manufacturing Co., Philadelphia and Toronto, maker of Pedrick piston rings.

In preparation for a number of years, this manual is claimed to be the first publication of its kind in the industry. It covers engine repair work on both gasoline and diesel engines.

Broken down into sections covering specific models, it contains 39 pages devoted to gasoline engines such as Autocar, Buda, Continental, Dodge, G. M. C., Hercules, International, Mack, Reo, Studebaker, Waukesha and White. The 20 pages on diesel engines cover such makes as Buda, Cummins, Dodge, G. M. C., Hercules, Mack and Waukesha-Hesselman. The 36 additional pages include: "Gasoline and Diesel Engine Reconditioning Procedures" with subdivisions handling specific engine problems such as: major causes of excessive oil consumption; replacing bearings; piston groove work; refitting piston rings, etc.

Written in down-to-earth English, the manual bulges with over 150 charts and illustrations, making possible a more thorough understanding of the wealth of information it contains

This new manual is Section 2 of the Pedrick Engine Repair Manual which also includes sections on passenger-car and farm tractor engines. The manual is available to fleet operators through Pedrick distributors.

A spare tire separate from the wheel!

It's as out-of-date as a spark plug with a separate gasket!

Changing a spark plug and hunting for a gasket to go with it is as old-fashioned as laboriously stretching a spare tire on a wheel. Edison's patented "SPUN-ON" Leakproof Gasket is an integral part of the plug. It can't slip off or be lost. It makes a 100% compression-tight fit between engine block and spark plug. The "SPUN-ON" Gasket is worth its weight in gold when it comes to saving gas, preventing loss of compression, putting to work all the power a cylinder is capable of developing.

If you have a spark plug problem, take advantage of Edison-Splitdorf's *Transportation Service Department*. Years of experience and engineering skill are available to you without cost or obligation. Meanwhile, see your jobber for Edison Spark Plugs with the "SPUN-ON" Gasket.

PERFORMANCE AS GREAT AS THE NAME

THOMAS ALVA EDISON CENTENNIAL

Edison SPARK PLUGS

EDISON-SPLITDORF CORPORATION, WEST ORANGE, N. J.

Compact Shop

(CONTINUED FROM PAGE 39)

neath, supplies storage space for a whole tank car of gasoline.

Since the ground plot, on which the plant is situated, extends from one street to another parallel to it, trucks may enter from either street, gas up and exit on the other, thus, avoiding the necessity of turning around in the yard in order to exit. Crankcase lube, air and water, also, are dispensed at the island. The main thought behind this setup is one of time saving.

The same idea is worked out in providing a convenient means for passage between the two buildings. A door leading from the dispatcher's office gives egress into the paved yard, at the rear. Almost directly opposite is a side entrance into the garage. A window at the dispatcher's desk overlooks the gas island and all traffic passing from it to the streets at front and rear. Other windows give a complete view of the entire yard in back.

Ryder Trucking conducts a two-phase operation. It rents out trucks, singly or in fleets—with or without drivers—and does contract trucking for customers, direct. Its rental fleet consists of approximately 189 units. Firm-operated vehicles number 45 trucks, plus seven tractor trailers. Units are of 10 different manufactures and range in age from new to nine years old. Total annual travel for all vehicles averages approximately 3 million miles.

Employ 1000—5000-Mile PM

PM FOR combined fleet is set up on a 1000-mile and a 5000-mile basis. The former covers complete chassis lube, including transmission, rear-end and oil change. The 5000-mile inspection includes a complete body, as well as a mechanical, check. The detailed instruction sheet states in extra-heavy black type that "No rattles *due to any cause* should exist in a vehicle, after the inspection is completed."

For handling its maintenance, at least 95 per cent of which it does itself, the concern's new shop building was planned and equipped with a view to time-saving operation. The structure, itself, is 100x135 ft.

Shop Has Blue Glass Windows

IN PLANNING its new building, Ryder Trucking Co. put a heavy emphasis on lighting as a necessary factor for working efficiency. The windows, 5x8 ft., are closely spaced and are glazed with glare-and-heat-excluding blue glass.

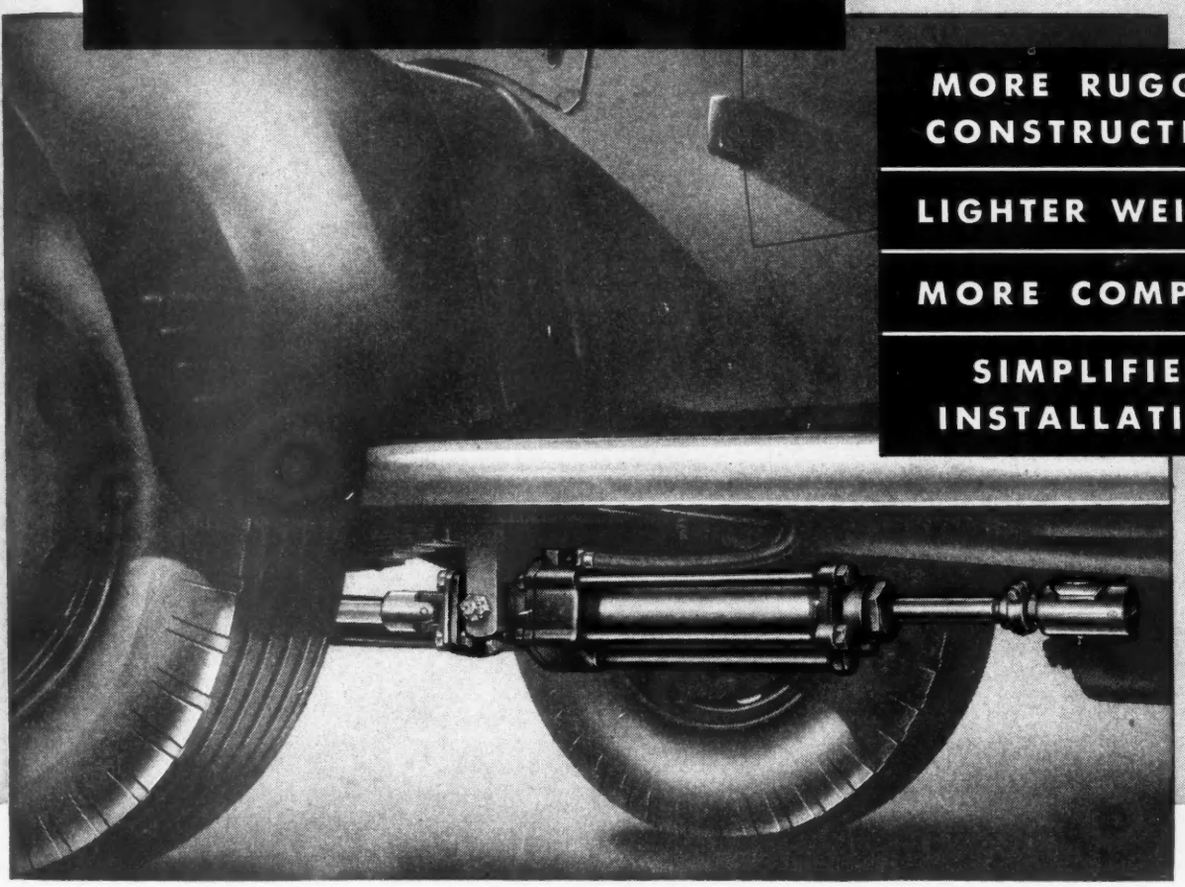
There are three entrance doors—one at the front and two at the rear end of the structure. Those door openings, 12x15 ft., are equipped with rolling-type metal doors.

In addition to excellent natural lighting provided by large door and window openings, still more light is supplied by two rows of continuous-strip skylighting, which extends for most of the roof length.

The skylight glass is of the blue, non-glare type. While admitting certain light rays, blue-tinted glass has a tendency to exclude others—notably the heat rays—thereby, removing one objection to skylight illumination in sections of the country,

(TURN TO PAGE 118, PLEASE)

THE REDESIGNED VICKERS *Hydraulic* POWER STEERING BOOSTER



MORE RUGGED CONSTRUCTION

LIGHTER WEIGHT

MORE COMPACT

SIMPLIFIED INSTALLATION

Added to the advantages always inherent in Vickers Hydraulic Power Steering are now lower price, a substantial saving in weight, more rugged and compact construction and an integral (instead of a separate) relief valve that greatly simplifies installation. More than a year's testing on city buses and heavy trucks under the most severe operating conditions has proved the redesigned Vickers Hydraulic Power Steering Booster (original design has been in use for 16 years).

The steering effort required can easily be supplied by your little finger . . . steering load is carried by the hydraulic cylinder . . . road shocks are not transmitted to the steering wheel . . . automatic protection against abuse . . . see new Bulletin 47-30 for all the facts about Vickers Hydraulic Power Steering System.

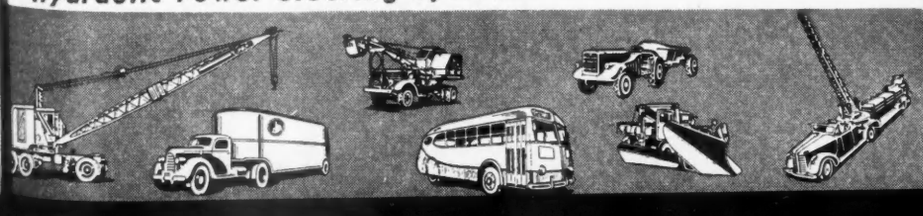
VICKERS Incorporated • 1418 OAKMAN BLVD. • DETROIT 32, MICHIGAN

Application Engineering Offices: • ATLANTA • CHICAGO • CINCINNATI • CLEVELAND • DETROIT • LOS ANGELES • NEWARK PHILADELPHIA • ROCHESTER • ROCKFORD • SEATTLE • TULSA • WORCESTER

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Write for **NEW BULLETIN 47-30**

Illustrating and describing the Redesigned Vickers Hydraulic Power Steering System.



Representative Applications of VICKERS *Hydraulic* POWER STEERING

3082

Compact Shop

(CONTINUED FROM PAGE 116)

where bright sunlight is the rule, rather than the exception. This blue glass, according to its manufacturer, excludes 20 per cent of the glare and heat rays that would, otherwise, be admitted.

Artificial illumination is supplied by 150-watt Mazda type lamps, mounted in RLM dome reflectors and hung 12 ft. above the floor or 8 to 9 ft. above usual work levels. Lamps are spaced approximately 19 ft. apart, in three parallel rows—along each side and down through the center.

Steel Deck Roof

THE roof is of steel deck type. That is, it is constructed of flanged steel panels, bolted together. With a surface treatment to make it moisture-resistant and insulating, this type of roof construction combines lightness and high tensile strength. And, it may be noted, that in areas subject to high wind velocities and/or heavy snow falls the "tensile strength" factor is a definite construction virtue.

The roof ridge is topped by a cylindrical ventilator, installed in a horizontal position. From both the utilitarian and the architectural standpoints, this type of ventilator is a marked improvement over the more familiar stack type. For one thing, it provides more uniform ventilation than the latter. Equipped with a chain-controlled damper, it can be partially or entirely closed to exclude wind-driven rain from the side on which the ventilating slot-like aperture is located. Following the roof's ridge line, the device blends with it-presenting a better visual impression than would a series of vertical stacks.

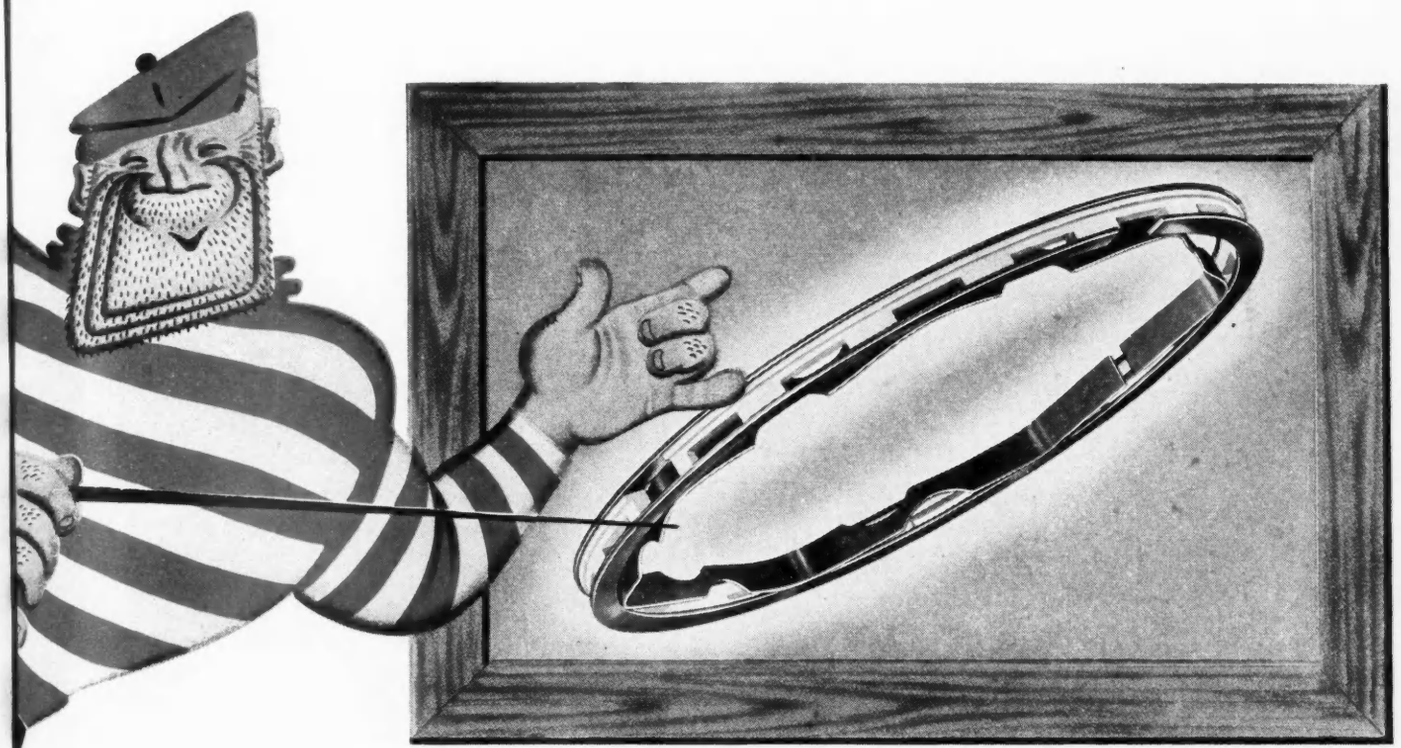
Maintenance Area Unobstructed

THREE quarters of the structure's area is allocated to mechanical upkeep operations and to fixed equipment items incidental to their performance. Due to steel truss support of the roof, the mechanical department area is entirely free of floor-obstructing columns. Truss anchorage is provided by concrete pillars along the outer walls and on a line, where the maintenance area is separated from other shop facilities, such as the paint and body shop, toilets and showers and the parts and supply room.

The supply room, 25x60 ft., is di-

(TURN TO PAGE 120, PLEASE)

What do you mean "DRY" ring ?



Steel-Vents Give Extra Lubrication Under Full Control

● Fact of the matter is that the Hastings Steel-Vent piston ring has the greatest oil-carrying capacity of any ring you've ever seen. It carries more oil to the cylinder walls . . . gives more lubrication—but keeps the oil under control.

This extra lubrication, under full control, means Steel-Vent is the right ring for any cylinder condition—rebored, resleeved or tapered. Ample lubrication is also one of the big reasons for the extremely long life of Hastings Steel-Vent rings.

"Successful Reboring"

This is not a fancy advertising brochure nor a complicated engineering treatise. It's a plain booklet packed with common sense suggestions for successful reboring. Its only purpose is to help you. Why not write for a copy today?

HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN

Hastings Ltd., Toronto

HASTINGS

STEEL-VENT PISTON RINGS

TOUGH *on Oil-pumping*
GENTLE *on Cylinder Walls*

Compact Shop

(CONTINUED FROM PAGE 118)

vided off from the shop by a partition constructed of wire mesh on a wood frame. This room serves as a storage space for tires, tarpaulins and furniture pads, as well as parts and other shop supplies, all of which have to be checked out and a record made, when issued. A 12-battery recharging outfit also is located here.

The toilet, wash and locker room, 16x25 ft., is floored and wainscotted with ceramic tile, while the showers are all tile. An ample and constant supply of hot water is furnished by a 40 gal., automatic, electric water heater. A battery of 36 steel lockers provide storage facilities for employees' street clothes. In accordance with Florida State Laws, wash and toilet facilities for white and Negro employees are separate. The dimensions above given cover the over-all installation.

Paint and Body Shop

EXTERNAL upkeep of its vehicles is an important part of Ryder Trucking's maintenance operation. The firm averages 12 paint-up jobs per month. Hence, its new paint and body shop, 25x38 ft. (open in front) and its equipment were planned to provide maximum working efficiency.

Removable canvass curtains to exclude dust form a booth to separate the painting and body working sections. Ventilation for the booth, when in use, is supplied by a ceiling-installed, 30 in., electrically-powered fan, which exhausts through a duct into the outer air.

The shop has two air compressors of 82 and 68 cu. ft. capacity, respectively. One of these is located in the mechanical department and the other in the paint and body section. These compressors operate on coupled-control, so that, if one is not sufficient to maintain a pre-determined minimum air pressure, the other automatically comes into operation.

Outlets for both air and electrical powering are generously provided. In the mechanical shop, air "chucks" and power receptacles are located, around the walls at 20-ft. intervals. The paint and body section has four outlets for air and for electrical current. This section is equipped with portable electric drills, a portable rotary power grinder, a 250-amp. arc welder and oxy-acetelene welding apparatus. For pre-painting, chassis clean-up there is a portable steam jenny.

Lube and Alignment Pits

TWO of the shop's most noteworthy inbuilt features are pits for the installation of lubricating and wheel aligning equipment. Located just inside one rear entrance door, on the east side of the build-

(TURN TO PAGE 122, PLEASE)

● WHO IS IT?

ANSWER... (To Question on P. 118)

Ernest R. Breech. He spent his boyhood in Lebanon, Mo., and learned to work with his hands in his dad's blacksmith shop. He has a reputation for being a fireball of energy.

(Another Cartoon Quiz is on P. 126)

Compact Shop

(CONTINUED FROM PAGE 120)

ing, the lube pit is of poured concrete construction, 4x28 ft. At center, on each side of the pit, is a bay, 2½x8 ft.

Attached to the east side of the pit by a swinging fixture is a large funnel to receive drained crankcase oil. From the funnel, the oil passes through a pipe beneath the floor to a 550-gal., underground tank. From the latter, the oil is pumped out for salvage by sale to a local concern, which refines and resells drained crankcase lube. The pit is artificially lighted by four 150-watt lamps in vapor-proof fixtures, having frosted glass covers and clamped-on wire guards.

Situated just outside the pit is apparatus for a time-saving method of crank-case filling. It consists of a flexible hose running from a 350-gal., under-the-floor tank and terminating in a filling nozzle. The latter is provided with two gages, one of which governs the amount of the fill, and the other acts as an accumulating meter for recording the total amount of oil used. An electrically-powered pump in the tank recess provides tank-to-nozzle flow pressure.

The wheel-aligning section, the equipment for which includes heavy-duty frame-straightening devices, is located at the opposite end of the shop. The pit here is 10½x14½ ft. and, also, is of poured concrete with concrete steps. The lighting system, similar to that in the lubricating pit, consists of six vapor-proof lamps. To make sure that the apparatus itself is dependably stabilized, the steel framework of the machine is anchored on poured-concrete piers, which go down to rest on bed rock. Supplementing the work of the wheel aligning equipment is wheel balancing apparatus of the same manufacture.

Machine Shop

AT THE front of the shop, next to the stockroom, is the machine shop, 20x20 ft. Divided off by a waist-high wooden railing, the machine section contains a 60-ton hydraulic press, a 6-ft. lathe, a drill press, and electric-powered valve refacing and reseating equipment.

Farther along on the same side, are equipment for tube and minor tire repairs, the time clock, an automatic water cooler, wood working machinery for body work and space for apparatus, such as an engine analyzer.

The layout on the opposite side of the shop is determined to a large degree by the fixed installations, such as the lube and aligning pits. Work benches are spotted between the bays (space between the roof-support columns). On this side, too, are one air compressor and a parts-cleaning tank with electrically-powered agitated circulation.

The firm has a new warehouse building under construction, 100x425 ft. Of trussed roof type—and, therefore, postless—this structure is located across the street from the plant. Served by spur railroad tracks, the building will have loading docks on all four sides. This setup is intended to expand the company's contract hauling volume.

END

(Please resume your reading on P. 40)

SHOP OWNERS GIVE THE VERDICT!

Model S-4 Brings Most For Your Money!

Healthy shop profits depend on the continued, dependable function of service jacks that can *always* jump to the job! That's why you should make very certain that you get an S-4! Compare its design and performance record with any other service jack or new post-war contrivance. See for yourself why the Blackhawk S-4 has won world-wide recognition as the outstanding Hydraulic Service Jack. Choose the jack that's a proven "champ." Place your order on file with your Blackhawk Jobber now. Yes, terrific demand may delay delivery to you — but the *extra value* is reason enough to *insist* on a Blackhawk!

***A Product of* BLACKHAWK MFG. COMPANY, Dept. J1167, Milwaukee 1, Wisconsin**

BLACKHAWK

A Mid-Way Shop

(CONTINUED FROM PAGE 63)

short length of chain and it is never lost. The drivers like this.

Rotating Engine Stand

FOR rebuilding our engines we built our own engine stand and will build several more of them. We build up a complete engine and ship this to shops, who in turn send us the removed engine for overhaul.

This engine stand has made it possible to turn out a great deal more work over other methods because the engine can be easily moved and clamped at any angle.

The stand turns in a complete circle, can be stopped at any point and clamped. The ends are made of steel angle iron true circles 39 in. in diameter. These are the continuous rings that hold the large pneumatic tires on farm tractors. They are made of ¼x1½x1½-in. angle iron and can be bought much more cheaply than they can be made. These form the ends of the stand which is 55 in. long and with adaptors which we have made we can position any engine in it.

We completely assemble a rebuilt engine in this stand with the exception of the oil pan which is installed after the engine has been replaced in the frame except when it is shipped out in which case the oil pan is installed.

We keep an extra rebuilt engine on hand for our tractors and sometimes for our other units.

For handling engines, transmissions and other heavy equpiment, we built a portable crane out of welded pipe. This is a common type of equipment especially in small garages but we make ours a little different and designed it to solve the problem of not having a hoist and track in the right place.

We made it big enough to straddle our tractors and put it on casters so that it was easily pushed into any position on the concrete floor in the shop. We can roll it over the engine stand, pick up an engine and roll it to a tractor and drop it in place with a minimum of effort.

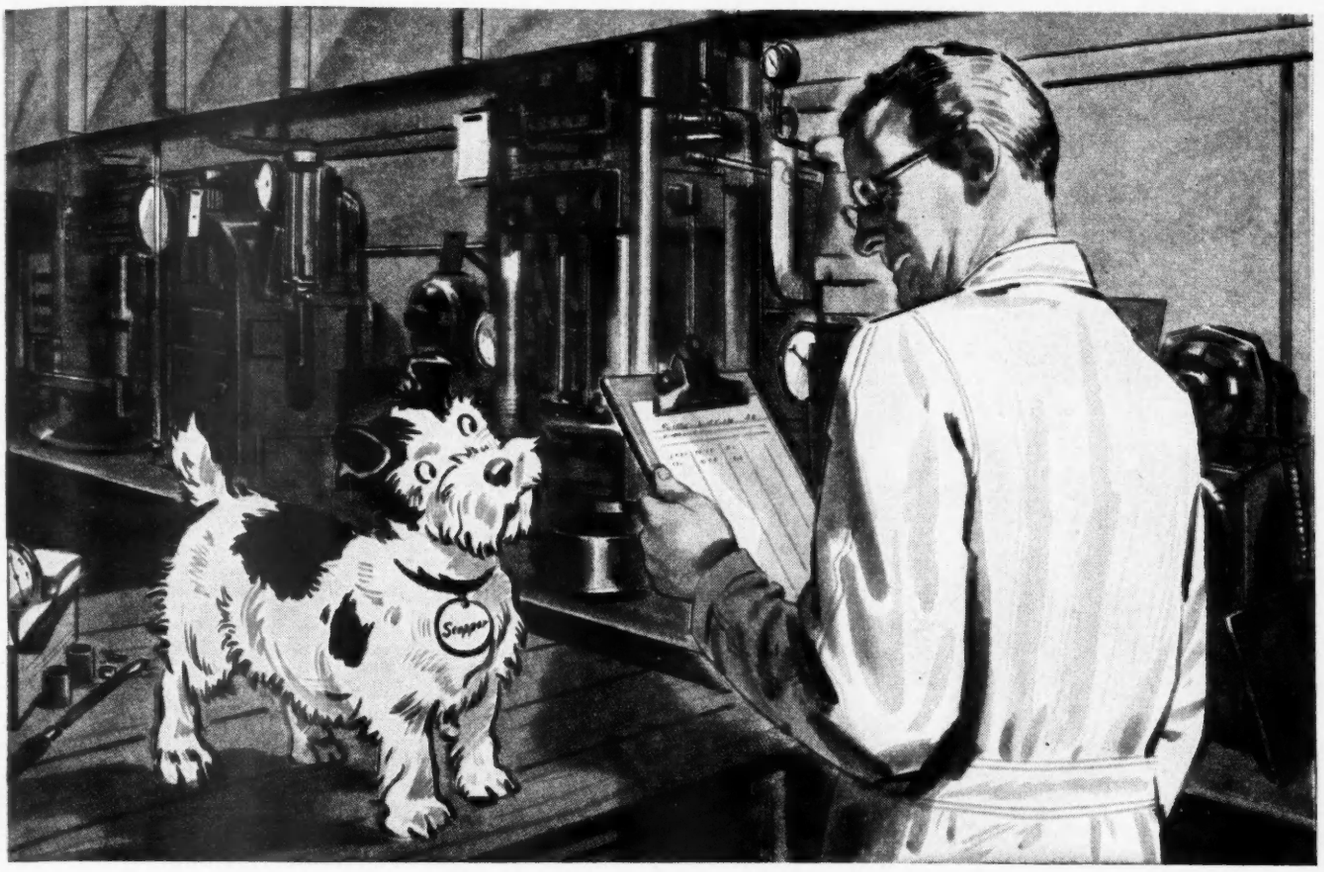
15,000 Mile Inspection

ALL equipment must come to our shop every 15,000 miles for periodic check. For this check we replace the vehicle with a spare and go through the entire unit. This includes trailers. On this check we remove trailer wheels and examine bearings, brakes, brake linkage. We go over the trailer for damaged roofs, springs, hangers, and every little broken part we find is repaired. If the trailer has not already been equipped with our bumper blocks we make two blocks out of welded angle iron to form a box and place this on each side of the rear of each trailer to act as a bumper into the dock.

These two steel boxes cost little and have almost completely eliminated the repair bills on trailer doors, bent and broken hinges.

Since both tractor and regular trailer come in for this 15,000-mile check, we go over the tractor. We check the records to form a case history of the unit and where the mileage or time element indicates that the end of the natural life span of a part

(TURN TO PAGE 126, PLEASE)



"Pilots are for boats," I snapped

I DON'T let the folks at American Brakeblok kid me a bit.

But I'm a curious pup and want to know what's going on—so, sometimes I stick my neck out and ask questions.

"Hey! What's all this?" I barked to a friendly-looking fellow when I trotted into a room in the plant that was all new to me.

"Stopper," he said, "this is our pilot plant." Right away, I suspected a trick.

"AW, go on!" I snapped back. "Pilots are for boats. Don't tell me you're stopping ocean liners now."

"No, nothing like that," he laughed. "A pilot plant is a small scale model of a regular plant. These machines are exact duplicates, in miniature, of regular production machinery."

It didn't take him long to make me see how important the pilot plant was in American Brakeblok's plan to manufacture *the best brake lining that can be made*. Production "bugs" are carefully worked out in pilot operations before regular production starts.

For you, this means a superior brake lining, designed to do the job you require, both efficiently and economically.

If you run a brake service business or are responsible for fleet maintenance you will find American Brakeblok Brake Lining your best answer to *more* safe stops with fewer adjustments from every set of lining you install.

Distribution through 39 strategically located warehouses

NAPA Symbol of Quality

American Brakeblok BRAKE LINING

AMERICAN Brake Shoe COMPANY

AMERICAN BRAKEBLOK DIVISION
DETROIT 9, MICHIGAN

A Mid-Way Shop

(CONTINUED FROM PAGE 124)

or unit is near, we replace it with the rebuilt counterparts which we keep in the shop for just such a purpose.

In this manner, we service adequately but we do not over-service since if there are no trouble reports on such parts as generators, carburetors, transmissions and so on, you may be spending too much money for service and not getting all the wear out. We try to spread our service as evenly as possible and are always suspicious when certain parts never give trouble and other parts give a lot of trouble.

Our job is to produce a replacement part or unit for any equipment in the system. By eliminating emergency work and having these units on hand we can always (and do) keep any unit in the shop until we are completely finished with it.

We know that this paying dividends on the road because this type of unit overhaul lasts much longer.

Everything Cleaned

SINCE much of our check at the 15,000-mile inspection is visual we require tractor and trailer to be completely and thoroughly steam cleaned before the inspection takes place. We are continually surprised at the number of minor deficiencies, cracks and breaks that are shown up by a simple job of steam cleaning.

Steam cleaning has also made it possible to give the shop a clean job on which to start a complete overhaul.

We rebuild our generators, fuel pumps, clutches, and reline and contour grind our brakes.

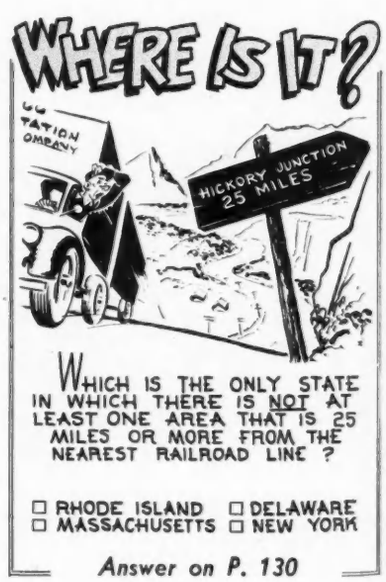
When we decided on one large shop and established it here a year ago we decided that the shop should be located in the center of the system and not necessarily in some large town such as New Orleans or Houston, which are at two ends of the line.

We find that our mechanics like to work in a smaller town, where they can live more cheaply, and have more of their salaries left, and where they can raise gardens and in general, participate in the the profits of the trend toward decentralization of industry.

END

(Please resume your reading on P. 64)

The couple had just been rescued from a tiny island after three days and nights. The girl extended her hand to the man and said: "Charlie, you're a dear, and thanks for being such a gentleman. Too bad you didn't know this gun was empty, isn't it?"



WHICH IS THE ONLY STATE IN WHICH THERE IS NOT AT LEAST ONE AREA THAT IS 25 MILES OR MORE FROM THE NEAREST RAILROAD LINE ?

☐ RHODE ISLAND ☐ DELAWARE
☐ MASSACHUSETTS ☐ NEW YORK

Answer on P. 130

over these dealers

Pennsylvania Dealers East of the Mississippi River
(See the next advertisement for Dealers West of the Mississippi)

Akron, O., George McDonnell Tire Co.
Albany, Ga., Georgia Tire & Battery Co.
Albany N. Y., Silverstein's Tire & Battery
Allentown, Pa., J. E. Dulaney
Anderson, Ind., Stagg's Motor Sales
Appleton, Wisc., Fred's Tire Service
Asheville, N. C., Asheville Tire & Recap Co.
Athens, Ga., Snow Tire Co.
Athens, Tenn., Tire Engineers
Atlanta, Ga., City Tire Co.
Atlanta, Ga., Emmett Steele, Inc.
Atlantic City, N. J., Superior Tire Co.
Augusta, Ga., Holloway Tire Recap Co.
Augusta, Me., Fort Western Tire Co.

Bainbridge, Ga., Bob's Tire & Auto Parts
Bangor, Maine, Eastern Auto Supply, Inc.
Baltimore, Md., Chesapeake Tire Corp.
Barron, Wisc., Johnson Brothers
Battle Creek, Battle Creek Auto Supply
Bay City, Mich., Harold Alexander
Bedford, Va., Auto Service & Electric Corp.
Belleville, N. H., Victory Tire
Biddeford, Maine, Biddeford Auto Parts
Binghamton, N. Y., Tom Lawler Tire Co.
Birmingham, Lee Rodgers Tire & Battery Co.
Bloomington, Ill., Clay Dooley
Boston, Mass., Automotive Distributor's
Bridgeport, Conn., Bridgeport Gen. Tire Co.
Brockton, Mass., Automotive Distributor's
Bronx, N. Y., Adies Service Station
Brooklyn, Bernie's Tire & Battery Service
Brooklyn, London Tire Co.
Brooklyn, Standard Supply & Tire Co.
Brooksville, Fla., Amstutz Motor Co.
Brunswick, Maine, Benjamin A. Glovsky
Bryon, Ill., Hamer Service
Buffalo, N. Y., Emmet McNamara Tire Co.
Burlington, Vt., The C. H. Goss Co.
Burlington, Wisc., Jensen's Tire Shop

Cairo, Ga., Wight Hardware Co.
Cambridge, Md., Engle Motors
Cambridge, O., Paul's Tire Service
Canton, O., City Tire & Supply Co.
Chambersburg, Pa., Keidel's
Charlotte, N. C., Tire Service, Inc.
Charlottesville, Va., Charlottesville Oil Co.
Chattanooga, Tenn., Bill Penney Tire Service
Chicago, Ill., Best Tire Co.
Chicago, Ill., City Tire Co.
Chicago, Ill., Stony Tire Co.
Chicago Heights, Chicago Heights Tire Co.
Cincinnati, O., Seventh Street Tire Service
Columbia, S. C., Sam Jones Tire Service
Columbus, Ga., Columbus Tire Recap Co.
Columbus, Miss., East End Motor Co.
Concord, N. H., Foy Tire Co.
Connellsville, Pa., Robert Work Service
Coshocton, O., Anderson & Son

Danville, Ill., Eddy Baer Tire Rebuilders
Dayton, O., Chas. F. Cotter Tire Co.
Daytona Beach, Fla., Troy Tire Co.
Decatur, Ala., Royal Tire Service
Decatur, Ill., Smith Tire Co.
Detroit, Mich., Motor City Tire Service
Dixon, Ill., Terminal Bldg. & Sales
Dover, N. H., Community Tire Co.
Durham, N. C., Montgomery & Aldridge

E. Moline, Ill., Kenny's Tire Service
E. Point, Ga., McKenney Tire & Appliance
Easton, Pa., Walter's Tire Co.
Eau Claire, Wisc., People's Tire Co.
Elgin, Ill., Elgin Auto Supply Co.
Elizabeth, N. J., Murphy Bros. Motor Sales
Elmira, N. Y., Elmira Recapping Service
Elyria, O., Elyria City Tire & Appliance Co.
Erie, Pa., W. S. Kerns
Evanston, Ill., Ernie McKay Texaco Service
Everett, Mass., Everett Tire Co.

Fairmont, W. Va., Edwin Nuzum
Fall River, Mass., Fall River Auto Supply
Fayetteville, N. C., Todd's Tire Service
Fitchburg, Mass., Hope Rubber Co.
Flint, Mich., Kessel Tire Co.
Florence, Ala., Southern Tire Co.
Fort Wayne, Ind., Porter Tire Co.
Fredericksburg, Va., Gayle Motor Co.
Freeport, N. Y., Jamaica Tire Stores

Gadsden, Ala., Malcom Auto Service
Gainesville, Fla., Heyward Allen Motors
Gainesville, Ga., Brock Tire Co.
Glennville, Ga., Glennwanis Service Sta.
Gloucester, Mass., Automotive Distributor's
Goldsboro, N. C., Stone's
Grand Rapids, Mich., Master Tire Service
Green Bay, Walter Dettmann Tire & Battery
Greenfield, Mass., Franklin Auto Supply Co.
Greensboro, N. C., Groome Tire Co.
Greensboro, N. C., Joe Melvin Service Sta.
Greenville, S. C., Thornton Tire Service

Hammond, Ill., Walker Bros.
Hartford, Conn., The Capitol Tire Co.
Havana, Fla., Gadsden Tractor Co.
Herndon, Va., Horn Motors, Inc.
Hicksville, N. Y., Tire Craft
High Point, N. C., Collins Tire Service
Hillside, N. J., Maple Avenue Garage

Indianapolis, Ind., Tires, Inc.

Jackson, Miss., Union Depot Service Sta.
Jackson, Tenn., Sanders Tire Service
Jacksonville, Fla., Modern Tire Service, Inc.
Jacksonville, Ill., Black's Service Station
Jamestown, N. Y., Jamestown Electrocap Tire
Janesville, Wisc., Lein Oil Co.
Johnstown, Pa., Super Tire Co.
Joliet, Ill., E. B. Scagnelli

Kalamazoo, Stewart & McIntyre Tire Serv.
Kankakee, Ill., Cardosi Oil Co.
Kingston, N. Y., Bert Wilde, Inc.
Knoxville, Tenn., Johnson's
Kokomo, Ind., Beall's Tire Shop

LaCrosse, Wisc., Jacobson One Stop Serv.
LaFayette, Ind., Quick Service Garage
Lake City, Fla., Paschall-Avery Tire Service
Lakeland, Fla., Ballenger Auto Storage
Lancaster, Pa., J. Gilbert Haller
Lansing, Mich., Morden Super Service
Lawrence, Mass., Albert E. Schlott
Lebanon, Pa., Claude Runkel
Lewistown, Pa., City Auto Port
Liberty, N. Y., Grossman's Tire Service
Lincolnton, N. C., City Service Station
Louisville, Ky., Kentucky Tire & Supply
Lynchburg, Va., Lynchburg Garage Corp.
Lynn, Mass., Automotive Distributor's, Inc.
Lynn, Mass., Reliable Tire Co.

Macon, Ga., Smetts Tire Co.
Madison, Wisc., Holmes Tire & Supply Co.
Manchester, N. H., Gladysz Tire Sales
Mansfield, O., Applan Tire Retreading & Vulc. Co.

Marion, O., Glenn Walraven
Martinsville, Va., Tire Rebuilders
McKeesport, Pa., Oscar's Tire Service
Mechanicsburg, Pa., Carl's Tire Service
Memphis, Tenn., State Tire & Oil Co.
Meridian, Miss., Central Service Station
Miami, Fla., Waldron Tire Co.
Milwaukee, Wisc., Lubotsky Tire Co.
Mobile, Ala., Gaston Tire Service
Morgantown, W. Va., H. & I. Auto Supply
Moultrie, Ga., C. B. Williams Service Sta.
Mount Airy, N. C., Quality Auto Store
Mt. Carmel, Pa., Penn Tire & Battery Serv.

Nanticoke, Pa., Pete's Tire & Battery Service
Nashville, Tenn., Pennsylvania Tire Serv. Inc.
Nashville, Tenn., Wholesale Tire Supply
New Bedford, Mass., Handler Tire Co.
New Haven, Conn., The Cooper Tire Co.
New Kensington, Pa., Sykes Tire Service
New Richmond, Wisc., Johnson Motor Sales
New Rochelle, N. Y., The New Rochelle Tire Service, Inc.
New York City, N. Y., Manhattan Tire & Rubber Co.
Newark, N. J., Mercury Tire Co.
Newport News, Va., Shackelford Auto Co.
Norfolk, Va., Master Auto Service Corp.
Norristown, Pa., Superior Tire Co.
North Wilkesboro, N. C., Dick's Service

Ocala, Fla., Ocala Motor Co.
Oil City, Pa., Jack Lowes Recapping
Oneonta, N. Y., The Oneonta Sales Co.

Palatka, Fla., Owens Tire Shop
Parkersburg, W. Va., Bones Tire Service
Passaic, N. J., Victory Tire
Paterson, N. J., Paterson Motor Sales
Peabody, Mass., Vernon Tire & Supply Co.
Pelham, Ga., W. Powell Oil & Tire Co.
Peoria, Ill., Grawey Auto Electric Co.
Philadelphia, Pa., John P. Gallagher
Plainfield, N. J., Collora Home Appliances
Portland, Maine, Remsen & Co.
Portsmouth, N. H., Frank Perkins
Portsmouth, Va., W. N. Holcomb & Son
Potsdam, N. Y., Van Ness Co.
Pottsville, Pa., Phil's Tire Service
Providence, R. I., Broadway Tire Sales Co.

Quincy, Fla., Inman-Johnson Motor Co.
Quincy, Mass., Automotive Distributor's
Quincy, Mass., Quincy Tire Shop

Reading, Pa., Oakbrook Auto Garage
Rice Lake, Wisc., Oliver Chevrolet Co.
Richmond, Va., The Kline Co.
Roanoke, Va., Wells Gas & Oil Co.
Rochester, N. Y., Raithel's Inc.
Rockford, Ill., Smith Oil & Refining Co.
Rome, Ga., Rome Tire Recap. Co.
Roxbury, Mass., S & J Palder

St. Johnsbury, Vt., The C. H. Goss Co.
St. Petersburg, Fla., Warrington's Service Sta.
Salem, Mass., Automotive Distributor's
Sanford, N. C., Budd's Tire Service
Savannah, Ga., Lawing Tire & Rubber Co.
Scottsboro, Ala., Word Motor Co.
Scranton, Pa., Kelleher's Tire & Battery Serv.
Selinsgrove, Pa., County Sales & Service
Selma, Ala., Petty Tire Co.
Seneca, S. C., Oconee Tire & Recap. Co.
Sheboygan, Wisc., Tire Mart
Sheffield, Ala., Southern Tire Co.
Somerset, Pa., Dumbauld's Tire Service
Somersworth, N. H., H. W. Skillings Co.
Somerville, Mass., Barman's Inc.
South Bend, Ind., Gafill Oil Co.
Sparta, Wisc., Rasmussen Oil Co.
Spartanburg, S. C., Robinson Tire & Recap Co.
Springfield, Ill., Herb Schien's Tire Store
Springfield, Mass., Genden Brothers
Stamford, Conn., Epstein Brothers
Statesville, N. C., Chambers-Thompson Tire
Staunton, Va., High-Way Tire & Tread
Sterling, Ill., Theo. Johnson Oil Co.
Syracuse, N. Y., Rusterholtz & Rossell Co.

Tallahassee, Fla., Allen Sales & Service
Tampa, Fla., Market Service Station
Tarpon Springs, Fla., Burruss Motor Co.
Taunton, Mass., Automotive Distributor's
Terre Haute, Ind., Downtown Chevrolet
Thomasville, Ga., Stokes Tire Co.
Tifton, Ga., Orr Tractor & Equipment Co.
Tupelo, Miss., Bob's Texaco Station
Tuscaloosa, Ala., Des Rochers Motor Co.

Uniontown, Pa., Mack's Tire Service
Utica, N. Y., Burke's Service

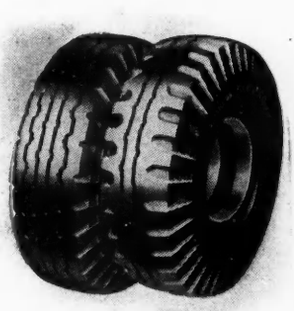
Valdosta, Ga., Oliver Brothers
Vermillion, O., Carl's Tire Service

Wareham, Mass., Hermanson Brothers
Washington, D. C., Leeth Brothers
Washington, N. J., Venable & Thompson
Waterbury, Conn., United Tyre Sales Co.
Watertown, Mass., M & H Tire & Retreading
Waukesha, Wisc., Kraska Oil Co.
Wausau, Wisc., Peoples Tire Co.
Waycross, Ga., Norton Tire Rebuilders
West Quincy, Mass., Triangle Filling Station
West Yarmouth, Mass., Farris Oil Co.
Westerly, R. I., Scott Oil Co.
Whiteville, N. C., Black's Service Station
WilkesBarre, Pennsylvania Tire & Supply Co.
Winchester, Va., Truck Suppliers, Inc.
Winston-Salem, Modern Tire & Appliance
Winter Haven, Fla., Calvin Tire Service
Wolfeboro, N. H., Carroll County Tire Co.
Worcester, Mass., Bowker-Hamblin-Malmquis
Wyandotte, Mich., Mullaney's

Xenia, O., Bill's Tire Shop

Yonkers, N. Y., County Cappers
Youngstown, O., Dissinger Tire Co.

Zanesville, O., City Tire Service



PENNSYLVANIA

PENNSYLVANIA RUBBER CO. • PENN-CRAFT PARK • JEANNETTE, PA.

49 years of successful business through successful dealers

Timing Truck Trade-Ins

(CONTINUED FROM PAGE 43)

the other two, it might as well be static on your radio.

The trade-in price of trucks reduces about 25 per cent a year. A truck that costs $2000 is worth $1600 at the end of the first year, $1200 at the end of the second year and $900 at the end of the third year. The more transportation you can get out of it before the upkeep cost indicates it should be sold, and it should be sold before its Blue Book value has been lost, the lower the operational cost per mile. Trucks come and go; new today, a junker tomorrow. They get wrecked, burn up, but the cost of hauling a ton of freight a mile stays on the books forever.

Three Fundamental Factors

WE HAVE proved to our own satisfaction, at least, that three things make for the great economy in operation of freight-hauling vehicles. One is a method of determining the correct trade-in period. We do this without regard for fixed depreciation charges because we believe such figures mislead us.

The second phase is to eliminate tire and wreck figures. Wrecks shouldn't happen, have no relation to overall maintenance costs, and tires are a law unto themselves. The important thing to know about a tire is how many miles it ran during its lifetime, not that it worked six weeks on the left rear inside of tractor No. 9. A tire should deliver a minimum number of care-free miles without regard to where it was located. Rotate 'em, pamper 'em, paint 'em, recap 'em, surely, but make the record a tire record and not part of the truck record.

The third part of our program is to get as many miles as we can during the useful life of a truck. The way to do this is to pile on the miles as will be further explained. We find economy in upkeep in operating a vehicle 16 hours daily instead of eight and plan our runs to that end. Our ultimate aim is to run a tractor 20 hours a day and use the remaining four hours for maintenance and service. This, we believe, will establish economy records in departments least expected.

Actual Case History

TO FURTHER explain our record keeping system, which tells us at all times what a unit is doing and when is should be traded in for a new one, we will take an actual case history on a 223 cu. in. unit which was bought in June, 1936, and sold Aug. 23, 1945. The illustration furnished with this article, Figs. 1A and 1B, is the actual record of this vehicle, plus identifying marks and comments placed on it for your information.

The figures and the three graph lines are on the same sheet. In this connection, I want to point out that there is nothing better than a graph to show where your truck is headed—

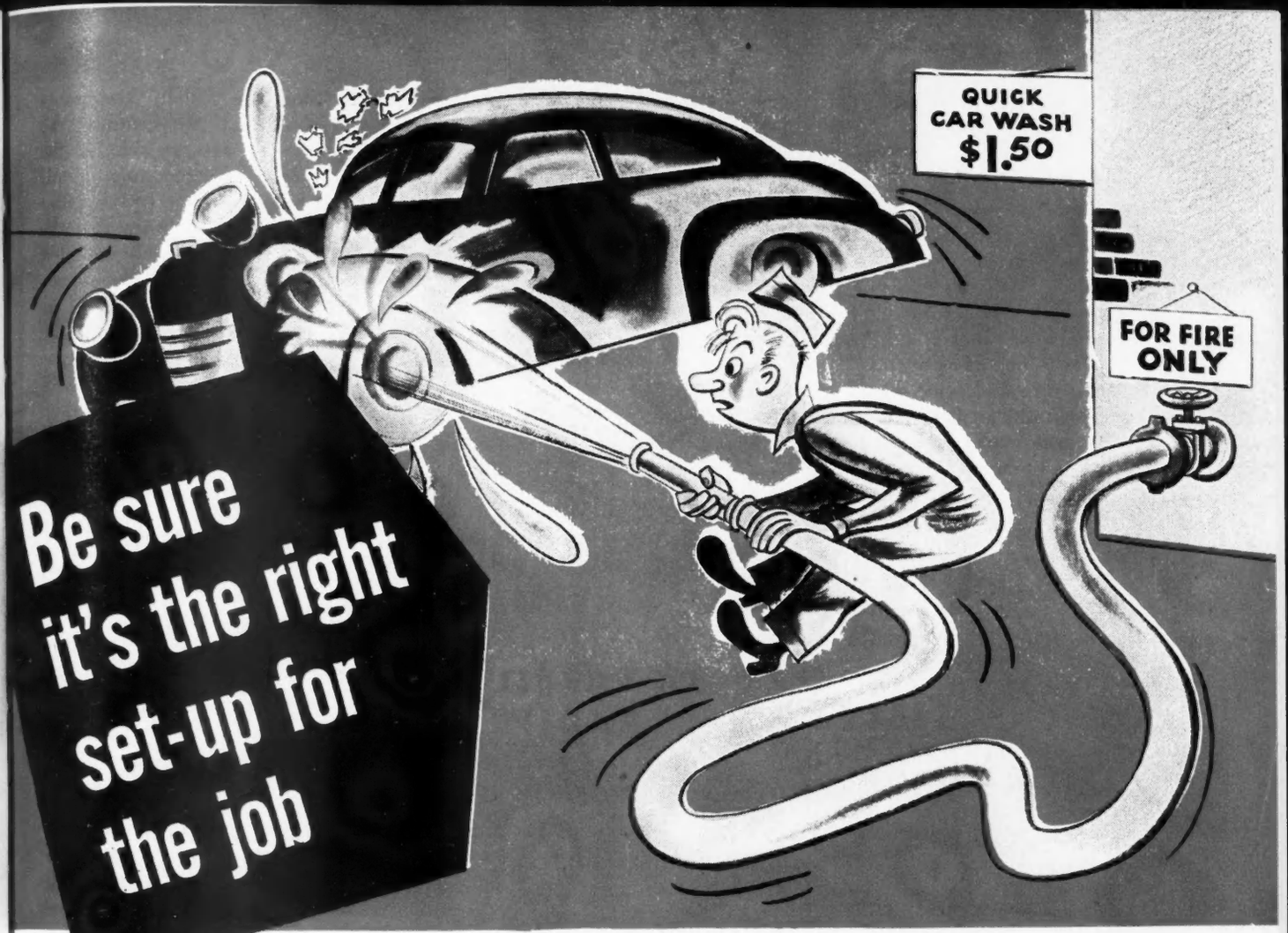
(TURN TO PAGE 132, PLEASE)

● WHERE IS IT?

ANSWER . . . (To Question on P. 126)

There is not a single state that does not have some district that is at least 25 miles removed from the closest railroad.

(Another Cartoon Quiz is on P. 132)



WHEN IT'S A QUESTION OF PISTON RINGS, American Hammered provides the proper set-up for *any* job, in any model of any make of engine. There are hundreds of American Hammered combinations, specifically engineered for the replacement field, for every engine condition. Those to whom efficient engine performance is the measure of piston ring value rely on American Hammered piston rings. Koppers Company, Inc., Piston Ring Division, Box 626, Baltimore 3, Maryland.

Steel-Edge Set
(Re-Ring)

KOPPERS

American Hammered Piston Rings

Timing Truck Trade-Ins

(CONTINUED FROM PAGE 130)

figures alone lack significance and punch. You get accustomed to increasing costs from reading the figures.

When you see a graph line climbing steadily month after month you know that it is not likely to take a sudden nose dive and come down—you know it's up there for good.

We have watched the operational cost of a unit start out at a spot below three cents per mile and start a slow climb. Despite the jagged edges of the maintenance cost line representing service, repairs and overhauls, the operational cost line heads ever upward and onward. The only way you can keep it out of the six cents per mile department is to trade it off.

Mileage Data

OUR record sheet is laid out by the month, and we can get from three years to 42 months on a single sheet. Since we usually keep units longer than that, we continue the record on the reverse side of the sheet. A sheet is assigned to each unit and the first recording (A) is miles per month. This is always just the number of miles the unit operated that month. This makes it easy to see when a unit is not being operated its usual number of miles. Suppose the unit usually travelled 5000 miles per month. That's over a thousand miles a week and, if it has been in the shop for a week, the monthly miles will drop to 4000 or under. This helps to remind you that you make money with trucks *on* the road.

Since this is a case history, the truck we are describing was bought in June, 1936, the first month's operation, July, showed a mileage of 4060 miles. You can read this by turning the page and reading down under the column designated A, Fig. 1A. It ran about that much a month. Sometimes it went up to 6000 and, one month, dropped down to only 40 miles for the month.

If we kept a record only of the accumulated mileage or speedometer readings, the fact that the unit had operated only forty miles in one month would have been obscured. That month we paid license fees (based on annual figures), insurance and other annual incidentals, for which you might say we lost at least one-twelfth on that score alone. Actually, the truck was in the shop getting an overhaul and, as a result, the cost per mile went up and off the

(TURN TO PAGE 134, PLEASE)

There is a Specially-Engineered

WORLD BESTOS BRAKE LINING

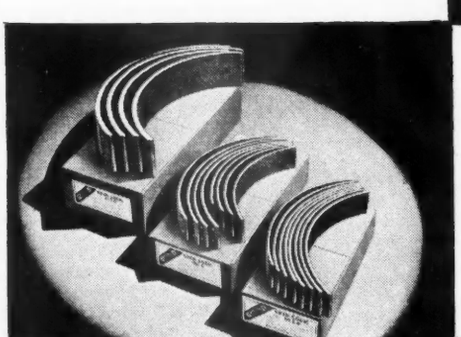
For Every Type of Vehicle
For Every Kind of Service

TRUCK GROUP BLOCKS—These master segments are engineered for thousands of models of trucks dating from 1933.

PRESCRIBED FRICTION SETS—"Prescribed" or "Engineered for each type brake" to give correct braking, longer life.

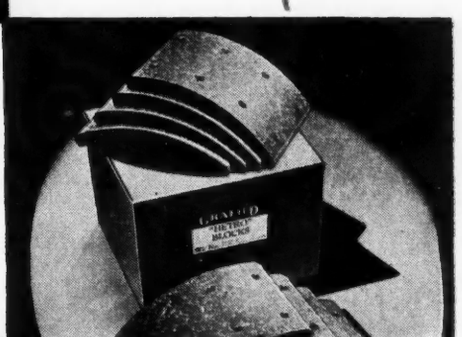
DELUXE WOVEN—A super-quality, dense, high friction lining for passenger cars, trucks and industrial applications.

ROYAL GRID MOLDED (Rolls) — A top quality molded lining designed especially for internal brakes. Quiet and long-lived.

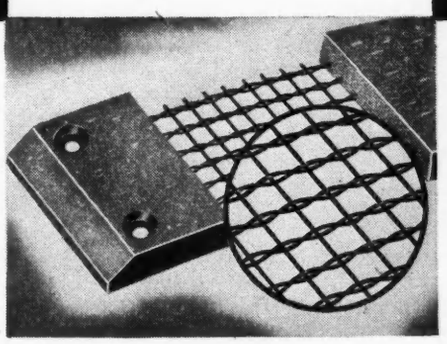


GRID LOCK SETS — Wire back sets for Ford, Chevrolet, Plymouth and the popular GM and Chrysler cars.

HETRO BLOCKS — Engineered in several formulas. Provide lowest cost per mile; highest safety factor.



MESHLOCK WIRE BACK REINFORCEMENT prevents "spot bulge" when riveting lining to brake shoes — no more daylight between lining and shoe, spongy pedal action or tough adjustments.



WORLD BESTOS CORP.

NEW CASTLE, INDIANA

5013

Timing Truck Trade-Ins

(CONTINUED FROM PAGE 132)

record sheet—because, by our methods, no miles means ruination as far as economy figures are concerned.

Next to column A is the B column and this gives the accumulated mileage. Thus, at a glance, you can read the accumulated mileage and the monthly mileage. When this truck had done its 6009 miles in the month of July, 1937, it had an accumulated mileage of 61,486.

Cost Data

NEXT is the C column, which also extends across the page. This column indicates total accumulated cost: The original cost, plus the operational cost, and the cost of maintenance. This includes washing, greasing, servicing, repairing, gasoline, oil, everything except tires and wrecks.

Then comes column D, cost each month— the operational cost such as gas and oil and the maintenance cost, less the original cost.

Finally, we come to column E, and this is the accumulated maintenance cost. For instance, at the end of the first year, the accumulated maintenance cost was $1,612.62; the total cost was $2,839.38 and the total mileage was 57,430.

The cross lines on the chart represent "cents per mile." There are 36 spaces in this column, and it starts at the bottom with one cent per mile and ends at the top with 36 cents per mile.

Graph Lines on Cost Sheet

THE three graph lines at the bottom of the same sheet are set up on these figures. For your identification purposes only, these lines are labeled, from top to bottom, O, P and Q (with us successfully resisting an impulse to make it OPA).

The top line, O, charted in red ink on our forms, represents the cost of the vehicle plus operational costs. The line starts above the top of the sheet—by reason of having to absorb the purchase price and having, as yet, run no miles to speak of—but it drops rapidly from a 36 cents-per-mile cost. At the end of the second month, it had dropped to 16 cents per mile and, at the end of the first year, had passed into the 5 cents-per-mile bracket. This line reached its lowest point in the 36th month of the life of the unit, when it reached 4 cents per mile. It remained in this vicinity for the rest of its life—we sold it in August, 1945.

This line could easily mislead a person if it were not for the significance of the other two lines. The more miles a vehicle travels the better this line will show, because it allows it to stretch out its original purchase price over a long period of time represented by lots of miles.

But we can't consider this cost alone. We have to consider the operational costs. Line P is the operational

(TURN TO PAGE 136, PLEASE)

● CAN YOU NAME THEM?

ANSWER . . . (To Question on P. 132)

Pennsylvania, Montana and Tennessee.

(Another Cartoon Quiz is on P. 136)

WAGNER CoMaX PROVIDES *Complete Coverage!*

No matter what your relining job—passenger car, truck or bus—the complete Wagner CoMaX line contains everything you need. CoMaX is available in drilled sets, rolls, blocks, slabs or cut segments to *exactly* meet any requirement.

It pays to have such *complete coverage* from one source of supply—especially when that source is Wagner. As a pioneer manufacturer of hydraulic brakes, Wagner *knows* what qualities are required in brake lining, and those qualities are found in CoMaX.

Consult your Wagner jobber, or write us.

Wagner Electric Corporation
6470 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID · HoRaL
CoMaX BRAKE LINING · AIR BRAKES · TACHOGRAPHS
ELECTRIC MOTORS · TRANSFORMERS · INDUSTRIAL BRAKES

B47-5

Timing Truck Trade-Ins

(CONTINUED FROM PAGE 134)

cost alone. Contrary to line O, line P had a low beginning which was down in the three-cents-per-mile bracket. At the end of 42 months, it had scarcely risen above four cents per mile but the incline was, nevertheless, inexorably upward.

In the 63rd month, Fig. 1B, the line P crossed line O and went on up to nearly six cents per mile. Line O is the line of original cost and operation.

Superimposed upon these two lines just described is a third line, Q, which is the line of maintenance cost. This cost is arrived at by dividing the miles per month by the maintenance cost to get the cost of maintenance per mile. At the end of 12 months, this line went up to six cents per mile. It dropped down to two cents per mile in the 18th month, and zig-zagged up and down until the end of the 41st month, which sent it up to 18 cents per mile. This represented an overhaul or a major repair.

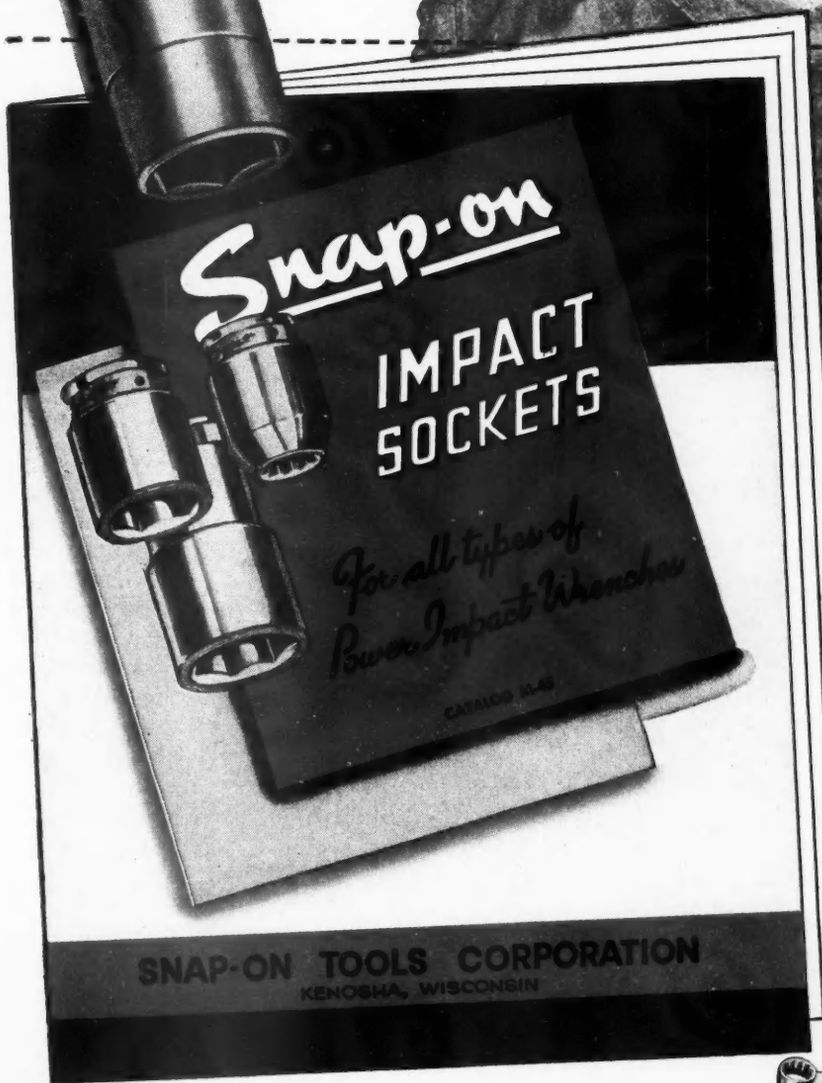
From that point, it dropped back down to three cents per mile but it didn't stay there long because, at the end of the 43rd month, the cost went so high as to send it off the sheet above 36 cents per mile. That costly job helped it a lot because it served to send it back down into the two and three cents per mile territory, where it coasted along for a few months. At the end of 76 months, it got down under four cents—and that is where the unit was sold back to the Indians.

The main point of the whole thing is that the cost of operation never got any cheaper after the 36th month. One line was jumping from two cents a mile up to 36 cents a mile and back again. Another line was headed upward and never did drop. And the line O, that started high in the clouds, had already reached its low and had started to climb in sympathy with the others. There was nothing that could be done that would head off these steady climbs. We sold it, as mentioned, at the end of 76 months. It never did get any cheaper to operate than it did at the end of the 36th month and, if we had traded it in there, we would have received about 75 per cent more for the vehicle than we did get at 76 months. We credit the price received for the vehicle back to the cost of operation.

Another Example

ANOTHER example along the same line was a pick-up truck we sold at the end of 36 months. At the end

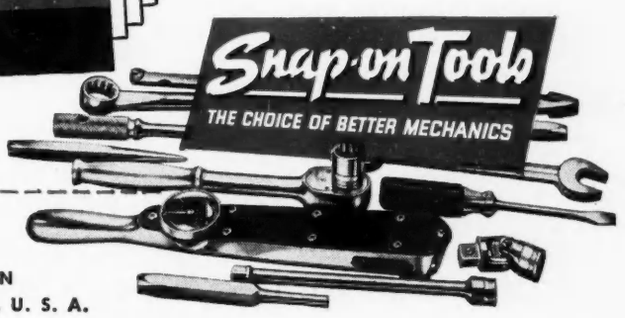
(TURN TO PAGE 138, PLEASE)



. . . have the strength and toughness that meet the demands of speed and safety

Under constant, punishing blows from powerful pneumatic drivers, Snap-on Impact Sockets prove their ability to perform dependably and efficiently. Specially designed from superior alloy steel, these sockets are tough . . . they fit accurately . . . lock securely, contributing to greater operating speed and safety.

Snap-on Impact Sockets are available in hexagon and square sizes to fit ⅜", ½", ⅝", ¾", 1", and 1½" square drive impact wrenches. Available through Snap-on's nationwide, direct-to-user tool service.



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SNAP-ON TOOLS CORPORATION
8026-F 28th AVENUE • KENOSHA, WISCONSIN
International Division: Kenosha, Wisconsin, U. S. A.

Timing Truck Trade-Ins

(CONTINUED FROM PAGE 136)

of 26 months its cost was as low as it ever got. We operated it the next 10 months at exactly the same cost. If we had sold the pickup at the end of 26 months, when the chart indicated that it should be sold, we would have received enough money, which, when credited to the operation, would have resulted in an average per mile cost for the 26 months of two and one-half cents per mile; whereas by selling it at the end of 36 months, our average cost was nearly three cents per mile.

Since the trade-in price is credited back to the cost of the operation, it has a direct bearing on the per mile cost. Say a new truck costs $1000, runs two years or 120,000 miles. The trade-in value would be about $500 and, if sold at this point, $500 would be the cost of operation of 120,000 miles, plus gasoline, oil, service and repairs. This, we contend, is *real* cost per mile.

Timing the Trade-in

THE graph teaches us that the trade-in must take place at or before the operational cost line crosses the line of original cost and operation.

Miles that you can put on before this period will definitely increase the economy of the operation. This brings us to a third phase of our economy of operation, or ways and means for adding miles to the truck during the fruitful first years. We have proved to our own satisfaction that maintenance costs are less on a tractor that runs sixteen or more hours daily.

Putting more miles on a unit in a short time will do more than reduce mileage costs. In one way of looking at it, the tractor will be two years old. its fenders and paint are still good. and it will have enough miles under its hood to retire, BUT it will still trade in at the two-year price.

There are also fixed charge economies to be had when you operate a tractor 16 to 20 hours daily. Most tractors run 60,000 miles a year. On this 60,000 miles in one year, there are certain fixed charges such as license fees and insurance. Say, for instance, that this charge is $500. If you drive this tractor 120,000 miles a year, instead of 60,000, you reduce these fixed charges by one half or, in the case of the mythical $500, you reduce it to $250. You also save the initial cost of the second tractor, which you would have to have to drive the other 60,000 miles, and, on this tractor, you save all the insurance and license charges, or all of the mythical $500, which, added to the other saving, represents a total of $750 saved plus a truck.

(TURN TO PAGE 140, PLEASE)

● WHERE'S HOMER?

ANSWER . . . (To Question on P. 136)

Brazil. The big share of truck exports for 1947 will go to Brazil. The $100,000,000 transaction for 53,000 trucks is one of the biggest commercial truck deals in automotive history. The trucks are being shipped unassembled and are being put together at Ford and General Motors plants at Sao Paulo.

(Another Cartoon Quiz is on P. 140)

Budd Wheels sell on PERFORMANCE

Truck, bus and trailer operators are plenty smart. And they know their costs to the third decimal point.

That's why more buses, trucks and trailers in the U. S. A. are equipped with Budd Wheels than with *all other makes combined.*

Budd's got a wheel for the job your equipment is doing. More than 1400 different kinds, the result of invention, scientific research, and knowing the wheel business. 25 years of leadership is no accident.

When ordering new equipment, or making a change-over, specify Budd Wheels. There's a top-flight Budd distributor near you. The Budd Company, Detroit, Michigan.

BUDD WHEELS

THE ONLY WHEEL WITH COLD TAPERED DISC

Timing Truck Trade-Ins

(CONTINUED FROM PAGE 138)

Thus, you do twice as much business on one-half of the capital investment.

Advantages of 16-Hour Runs

WE HAVE had a 16-hour route running for a number of years and it has worked out perfectly. Besides, it has taught us a few things about trucks; one of which is the surprising fact that it does a truck good to run it long hours.

On our Kansas City and St. Louis run, the breaking point is our headquarters in Moberly, Mo. Here we change drivers and trailers but the tractor keeps on to St. Louis under another driver. This tractor gets to St. Louis and then starts back to Kansas City. It runs 16 hours every day and is handled by two drivers. We have had ample opportunity to study all phases of this operation.

We have discovered that rings last longer. Shop records disclose that although the tractor does twice as much work as the rest, it requires less tune-up time, less than half of the valve grinding time, and goes a longer period between major overhauls. We attribute some of these advantages to the fact that the tractor stays hot and, consequently, is less subjected to cooling and heating stresses. It definitely proves that it doesn't hurt them to run them.

On the basis of our figures on this run, we have evolved a theoretical setup approaching our ideal of operation. This would be a run under two or three drivers totalling 20 hours. Four hours out of the twenty-four would be used for service and maintenance.

Our records and graphs as previously described give these 16-hour tractors a chance to make or break themselves, and they consistently show up with better mileage costs than the trucks that run only eight hours per day.

Other Advantages of Graph

WITHOUT a graph you can't see the slow upward rise of costs, figures alone are not enough. With such a system as we are using, you can anticipate the need for new trucks and can place your orders in advance for such units as are needed. You can take advantage of price situations, when they exist, by buying in advance and storing, if necessary, until needed; or you can be sure of having replacements at the proper time by placing such advance orders.

END

(Please resume your reading on P. 44)

Top ring groove wear licked at last, dependably, economically, with the

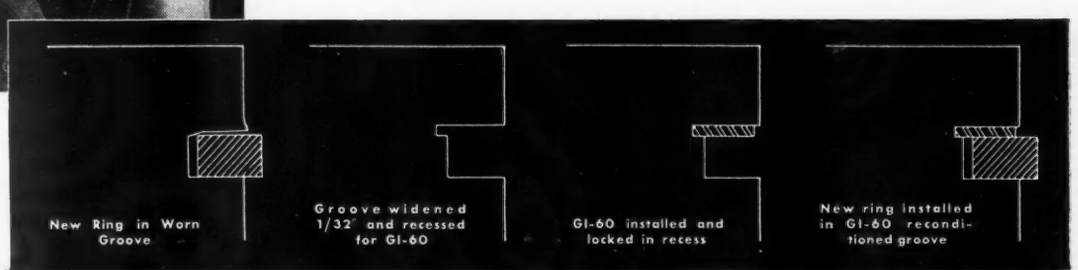
SEALED POWER GI-60

EVEN an apprentice mechanic knows that when you put good piston rings into worn top ring grooves, those rings are down for a nine count before they start working. Worn grooves let gas blow by, cause ring damage, cylinder wear, and excessive waste of fuel. If you widen the groove and install a wider ring, you are asking for trouble—because you have changed the original specification of the engine manufacturer. An ordinary spacer means that you have merely put in a wider ring in two sections.

The new Sealed Power GI-60 Contracting Groove Insert is not a "spacer." It does not float. It is anchored securely at the top of the ring groove, which has been re-grooved to an absolutely true surface 1/32" wider than before, with a 1/32" recess at the top. GI-60 fits into this recess, locking itself permanently in place. It forms a heat-treated spring-steel shield that resists wear and pounding of the top land better than either aluminum or cast iron can resist it.

Your Sealed Power distributor is now equipped to furnish this service for you. It is the only dependable, economical answer to top ring groove wear. It is equally effective in worn or new replacement pistons. Cost is low. Benefits are great. GI-60 has been thoroughly field-tested and proved by large commercial fleets. Ask your Sealed Power distributor now for this new Sealed Power service.

Makes Old Pistons New—Keeps New Pistons Young



SEALED POWER PISTON RINGS

SEALED POWER CORPORATION

MUSKEGON, MICHIGAN • STRATFORD, ONTARIO

Tests Tell . . .

(CONTINUED FROM PAGE 61)

sludge residues which had been dissolved in the synthetic oil but were precipitated by naphtha dilution. Toluene was found to give a more reliable indication of the solids normally suspended in the oil, and during the latter part of the test filter changes were made on the basis of 3 per cent toluene precipitates.

Oil and Filter Changes

THE ONLY services performed at installation of synthetic oil were draining the crankcase and renewing the filter element. The test engines received no cleaning of any kind. Because of the sludged condition of the engines, oil and filter changes were made after the first 250 miles of operation, and again after another 250 miles. After the second change, subsequent oil and filter changes were controlled by laboratory analyses of periodic samples. The average oil and filter change mileage, based on General Baking Co. inspection of oil samples, for the test fleet was approximately 1800, exclusive of the two 250-mile "clean-up" changes at the start of the test.

Dilution and Contamination

A TOTAL of 200 synthetic lubricant samples was examined for gasoline content, and the results may be summarized as follows:

9 per cent or less dilution for two trucks averaging 33 miles per day.

9 to 17 per cent dilution for nine trucks averaging 18 miles per day.

17 per cent or more dilution for nine trucks averaging 10 miles per day.

Water content of synthetic oil generally remained below 1.5 per cent except where coolant leakage occurred. In 100 oil samples checked for water, four were found with a water content greater than 1.5 per cent.

Inspection of three badly sludged engines at the beginning of the test and also at the end of the test showed marked improvement in cleanliness had resulted from the solvent action of the lubricant on the petroleum sludge. Further indications of improved cleanliness were noted in other engines at different periods of the test, but in one vehicle, with 30,000 miles of previous petroleum oil usage, the engine was considered to be dirty after 4736 miles of operation (12 miles per day average) with synthetic lubricant over a period of 15 months. On the other hand, inspection at the end of the test of a clean, rebuilt engine installed at the beginning, revealed that sludging was negligible with the synthetic oil after one year's operation of 5685 miles, without oil or filter change.

Summary

1. No trouble from clogging was experienced during the changeover from straight petroleum oil to synthetic oil in badly sludged engines.

(TURN TO PAGE 145, PLEASE)

● WHICH IS IT?

ANSWER . . . (To Question on P. 140)

Studebaker produced 46,000 trucks last year compared to 2500 prior to 1941.

Tests Tell . . .

(CONTINUED FROM PAGE 142)

2. The synthetic lubricant proved generally effective in removing previously existing sludge deposits in this test.

3. Rear-bearing seal leakage was experienced in two engines, perhaps related to the solvent action of the synthetic oil on previously existing sludge deposits on worn seals.

4. Sludge formation was negligible in an engine which started the test in clean condition.

5. No rusting problem was encountered with the synthetic oil. Internal coolant leakage developed in one engine.

6. Although cold starting is not a general problem, the synthetic oil was found beneficial in this respect.

7. Maintenance costs, including fuel economy, with synthetic oil were at least comparable with petroleum oil.

8. Oil economy, on the average, showed some improvement during the synthetic oil test period.

Little Falls Laundry Test

A TEST of synthetic motor oil No. 300 was started in August, 1944, by the Little Falls Laundry Co. in a group of 12 delivery trucks operating out of the Red Bank, N. J., branch, which serves approximately 100 communities in an area along the New Jersey shore. Monthly driving mileages for individual vehicles run from 380 to 1260. The general pattern of operation consists of trips from 5 to 40 miles (at 45 m.p.h. governed speed) from the branch to surrounding communities, then multiple-stop deliveries partly on unpaved roads.

Ten of the test vehicles are rated 1½-ton capacity. Nine of these are 1941 models with 226 cu. in., 6-cyl. L-head engines, and one, a 1936 model powered by a 263 cu. in. L-head six. The remaining two are ½-ton panel types, 1938 and 1940 models, with 221 cu. in. V-8 engines, used for local deliveries around Red Bank. At the start of the test, mileage on the 1941 models ranged from 21,000 to 53,000, while the panel trucks had been driven 45,000 miles and the 1936 model registered over 103,000 on the vehicle and 39,000 on its rebuilt engine.

One 1941 engine had been overhauled 4700 miles prior to the test, and one at the start, while four others had valve and carbon jobs approximately 12,000 miles before changeover to synthetic oil. No repairs had been made on the 1936 truck engine since overhaul, nor on the panel truck V-8's.

Straight petroleum oil, SAE 30 in summer and SAE 20 in winter, had previously been used, and oil filter elements were changed on the basis of dipstick inspection, except in the panel trucks which had no filters. No oil changes were made between engine periods except when running repairs required opening the engines. Due to the nature of operation and to accumulated mileage on the test fleet, oil consumption was generally high. Engine sludging was moderate in 1½-ton trucks and heavy in the ½-ton panel types.

(TURN TO NEXT PAGE, PLEASE)

Tests Tell . . .

(CONTINUED FROM PAGE 145)

Test Program

WITHOUT cleaning the engines, synthetic oil was installed along with cotton-waste filters. Filter elements were replaced when the oil was changed, at approximately 500 miles. In the panel trucks without filters, a second "clean-up" oil change was made under 1000 miles because of sludge conditions. Two thousand-mile oil samples were furnished the lubricant manufacturer for analysis, and for a period of 17 months, the first phase of the test, no further oil or filter changes were made except (1) on advice of the lubricant manufacturer, (2) in cases of coolant leakage, or (3) when engines were repaired.

For the second phase of the test, it was agreed to exclude seven of the original test vehicles because large additions of make-up oil in these high mileage engines greatly reduced the significance of oil analyses data. Of the five vehicles continuing in the test, two engines were overhauled prior to, and three engines during the first phase.

In conformance with a change in general maintenance procedure for the company fleet, these five vehicles were placed on a 3000-mile oil and filter change schedule during the second phase of the test, with analysis of oil samples at the change periods. This program is continuing.

Test Results

IN THE first phase, totalling 129,000 miles, oil and filter change mileages in the ten filter-equipped vehicles ranged from 7100 to 21,500, and in the two vehicles without flares, 3200 to 9100 miles, excluding initial clean-up and engine repair oil changes. Oil samples were checked for viscosity change, and analyzed for ash, acid, gasoline dilution and water contamination.

Ash analyses in the first phase showed an erratic pattern with 52 samples below the 0.5 per cent tentative limit, 15 ranging from 0.5 to 1.8 per cent ash, and one sample above 1.8 per cent. Ash was consistently higher in the two engines operated without filters. High ash values are ascribed to extended oil and filter change mileages in dirty engines, and to internal coolant leakage and high water content of oil in four instances. In the second test phase, covering 15 months and 60,500 miles to date, ash has remained well below the limit with 300-mile oil and filter changes, even in the one case of coolant leakage.

Total and free acid values were generally low and never above the tentative limits of 0.3 and 0.05 milliequivalents per gram respectively, probably because of large additions of make-up oil in the first phase, and also low and middle range temperature operation of the fleet.

Gasoline dilution averaged 4 per cent and was fairly consistent. Three-fourths of 79 samples checked showed viscosity decreases to 20 per cent, and eight samples, 20 to 32 per cent decrease. Lowest viscosity measured was 206 SUS at 100 deg. F. Viscosity increases up to 16 per cent were reported in 11 samples. Several of the higher viscosities appeared to be

(TURN TO PAGE 148, PLEASE)

To help you keep old fleet units on the job

Today, high cost of repairs and shortage of parts and equipment make it doubly important to use the best motor oil — to gauge drainage periods carefully. That's why so many fleet operators not only use Valvoline Motor Oil for greater protection but also send drainage samples to Valvoline "Fleet Lab" for regular checkups.

Valvoline Laboratory men know practical maintenance as well as engineering and chemistry. They can often detect trouble spots almost impossible to discover in the shop. Perhaps they can save *your* fleet from costly breakdowns and lay-ups.

Hundreds of fleets, large and small, depend on Valvoline "Fleet Lab" for advice. Ask your Valvoline man how this service can be obtained free—or write

VALVOLINE

FLEET CONTROL LABORATORY SERVICE

FREEDOM-VALVOLINE OIL COMPANY
Dept. 41F Freedom, Pennsylvania

Tests Tell . . .

(CONTINUED FROM PAGE 146)

due in part to high water content resuling from cylinder head joint leakage. Excluding coolant leakage, water content was less than 1 per cent in three-fourths of the samples analyzed, and 1 to 2 per cent in the other fourth.

Oil inspection data applies to both phases of the test, totalling 189,500 miles, except as otherwise noted.

Data on the 1½-ton 1941 model overhauled 4700 miles before the start of the test is of special interest. After preliminary clean-up changes for light sludge at 994 test miles, this vehicle was driven 21,564 miles in 17½ months (1st test phase) without either oil or filter change with the following results: (1) Viscosity changed gradually from 18 per cent decrease in first sampling to 12 per cent increase in the final one. (2) Free acid had practically a straight-line increase to the limiting value of 0.05 at oil change. (3) Total acid also increased gradually but more moderately and was .260, or well under the limit at the end. (4) Ash was under 0.2 per cent until the 13,500-mile sampling, but increased to 0.8 per cent, or 0.3 per cent over the limit, at 21,564 miles.

Engine inspection after 22,500 test miles showed a few spoonfuls of granular sludge in the sump, and a light deposit on the crank counter weights; otherwise the engine was considered clean, but the filter cartridge was heavily coated.

In the second test phase, this truck has operated 18,000 additional miles on 3000 to 6000-mile filter and oil changes with satisfactory oil conditions. In all, this vehicle has accumulated 40,457 test miles without repairs and with oil economy averaging 770 miles per quart.

General Comments

FROM inspection of six engines at different test periods, it was apparent that dirty engines were being cleaned up, and overhauled engines were remaining substantially sludge-free.

No clogging of oil lines or screens was experienced in the changeover to synthetic motor oil.

Oil additions increased sharply in two comparatively high mileage test engines with bearing seal and pan gasket leakage. However, leakage has not been a problem in overhauled engines.

Oil economy has generally been better with synthetic oil No. 300, as compared to the SAE 20 and 30 petroleum oils used.

No rusting was observed when test engines were opened. After standing open to the air, one engine developed a thin film of rust on the cylinder walls which was easily wiped off.

On the basis of oil inspection data, the lubricant manufacturer recommends increasing the present 3000-mile oil change schedule.

Engine operating and maintenance costs appear at least comparable in this limited test. Carbon and valve work has been reduced. Additional test mileage is necessary before conclusions can be reached on engine overhaul life.

END

(Please resume your reading on P. 62)

RUGGED, PRECISION-ENGINEERED PERMITE PARTS "Keep 'Em Moving"

. . . at *Low* maintenance cost!

Don't let truck breakdowns eat up your fleet operating profits. When durable, accurately engineered Permite Replacement Parts are used, you have positive assurance that reconditioned trucks, buses or passenger cars will "stand up and take it" under the toughest, most punishing service conditions.

Fine quality PERMITE Parts are as easy to install as they are hard to wear out. Their dependable, definitely superior performance has made them preferred original equipment in many of the world's leading cars and trucks . . . and preferred Replacement Parts everywhere.

To keep your fleet in continuous operation at minimum maintenance costs, replace with dependable PERMITE Parts. See your Jobber for your requirements.

ALUMINUM INDUSTRIES, Inc.
CINCINNATI 25, OHIO

REPLACEMENT PARTS

PISTONS	VALVE GUIDES	WATER PUMPS	CYLINDER SLEEVES AND ASSEMBLIES	TIE-ROD ENDS	MUFFLERS AND CLAMPS
PISTON PINS	VALVE STEM KEYS	WATER PUMP REPAIR KITS	SPRING SHACKLES	BOLT SETS	TAIL PIPES
VALVES	VALVE SPRINGS			BUSHINGS	

Use postage-paid card inserted at page 65 for free information on advertised products

Mobile Telephone

(CONTINUED FROM PAGE 71)

on a passerby to call our Baltimore shop for assistance, because he was carrying valuable cargo and was under orders not to leave it alone for any reason. At that time of the morning, at that point on the highway, with the closest public telephone approximately 20 miles away, it is problematical how soon the passerby could have, or would have, contacted our Baltimore shop. It may have taken a half hour or, if he were forgetful, it may have taken an hour or two.

Even if our road supervisor would have come upon this unit, he, then not being equipped with a mobile telephone, would have had to drive 20 miles to the nearest public telephone. Upon contacting the shop, he would have relayed the information given him by the driver. If the shop would have required any additional information that he did not have at the moment, the road supervisor would have had to return to the scene of the breakdown, get the necessary information and drive another 20 miles before any decision could have been made or action taken.

The convenience of speedy telephone conversation is not the only advantage we gained from our mobile telephone equipment. Confining it to this incident, fleet maintenance and operations men will spot these additional advantages:

1. Schedule was maintained.
2. Delay held to minimum.
3. Not just any mechanical aid, but the right man armed with complete information and proper parts and tools.
4. Repair cost held to minimum because of proper information.
5. Driver cost normal. If the delay had been prolonged, the driver would have been on overtime.
6. Perfect control of the situation. The road supervisor was present at all times, providing added security for driver and valuable cargo. The shop was informed of the breakdown soon after it occurred, our dispatchers learned of the delay almost simultaneously, and both were promptly informed when the truck rolled off to its destination.

Why Mobile Telephone

WE THINK that this incident also serves as an excellent example why we selected mobile telephone equipment rather than the two-way, privately owned and operated radio communications system. Both were given thorough consideration before any decision was made, with the fol-

(TURN TO PAGE 154, PLEASE)

Special Body Unloads Coal

Diamond T Model 509, equipped with a mechanized unloading gear, delivers stoker coal for a St. Louis, Mo., fuel supplier. Motor Truck Sales and Service Co. of that city designed and built the special body

Mobile Telephone

(CONTINUED FROM PAGE 150)

lowing points being the principal deciding factors:

1. No original investment in equipment.

This would have been a big item with us, because we would have required coverage for approximately 350 miles, necessitating an expensive system of relay stations in addition to basic equipment, which consists of a home station and car installations.

2. No extra manpower required.

Having private two-way radio equipment, it would have been necessary to employ highly skilled and highly paid technicians and operators on a 24-hour, 7-day basis.

3. No special training of operators of mobile unit.

Everybody knows how to use a telephone. The slightly different technique requires but a few minutes' instruction.

4. No maintenance problems.

In addition to skilled maintenance men, adequate shop space would have to be provided, inspection and maintenance techniques developed, and money invested in various parts.

5. Greater flexibility.

With mobile telephone, we can be connected to any telephone instrument anywhere. If for some reason we wish to speak to any of our executives, while faced with a problem that can be settled only by one of the company's officers, we can get through to him at his home or any other place he may be where there's a telephone. Direct calls for police or medical aid can save much time when every minute counts. Also, our home base facilities are as broad as our telephone switchboard. which provides direct contact with any desk and has quite a few outside trunk lines and a private line to eliminate busy-line waiting.

6. No FCC permit required.

The licensee, in our case the Bell Telephone companies in the states where we operate, is the only one requiring an FCC permit. We merely are subscribers to a common carrier service.

7. No expense and problems incident to securing radio frequency and band.

From what we hear, this is a long-drawn-out affair. In the case of mobile telephone, the procedure is no different than having another telephone installed.

Mobile Telephone Service

THE first mobile radiotelephone license was granted to the Bell Telephone System over a year ago and, aside from experimental sets, the first subscriber service was introduced in St. Louis. Since then similar service has been introduced in most of the populous areas in the country.

Our first mobile telephone set was installed on Nov. 13, 1946, and service began on Nov. 15, 1946. Aside from a few minor adjustments, we have had economical, trouble-free service since.

The following three classes of service are being offered:

1. A general, two-way telephone service.

This is the broadest service and most suited, we believe, to fleet oper-

(TURN TO PAGE 156, PLEASE)

ATTENTION!

KRIEGER ALL STEEL Custom-Styled Vans

are now available through authorized dealers

ALL OVER AMERICA AND THE WORLD!

Truck-body builders throughout the country were eager to get Krieger franchises as soon as they learned about the Krieger All Steel Custom-Styled Van. And no wonder . . . this sensational van bids fair to revolutionize the business! Consider its 10 All Star Features and you'll see why old timers in the industry are saying, "This new Krieger development is the greatest thing in trucking since the self-starter!" So don't put off . . . visit your nearby Krieger dealer *today* and be impressed by its multiple advantages. (If you don't know your dealer's name, write us direct for the information.)

10 ALL STAR FEATURES

- ★ STRENGTH OF ALL STEEL CONSTRUCTION
- ★ SIMPLICITY OF INTERLOCKING SECTIONS
- ★ BEAUTY AND DURABILITY OF CUSTOM BODIES
- ★ HIGH-TENSILE STEEL FOR EXTRA STRENGTH
- ★ ALLOWS 20% TO 30% EXTRA PAYLOADS
- ★ AVAILABLE IN 12', 14', 16' LENGTHS
- ★ ALL STEEL TOP
- ★ EASES MAINTENANCE
- ★ CUTS REPAIR COSTS
- ★ DAMAGED SECTIONS QUICKLY REPLACEABLE

BUY RIGHT!
BUY THE BEST
BY KRIEGER!

KRIEGER STEEL SECTIONS, Inc.

11-11 34th Avenue • Long Island City, N. Y.

Mobile Telephone

(CONTINUED FROM PAGE 154)

ation needs. It provides for telephone service between any vehicle or other mobile unit so equipped, and between any regular telephone subscriber anywhere.

2. A two-way dispatch service between a subscriber's office and his mobile units only.

This type of service enables the base installation, in the dispatcher's office, for example, to contact and conduct a two-way conversation between any vehicle equipped with radiotelephone, but it does not provide for placement of calls by the driver of the vehicle so equipped.

3. A one-way signalling service.

With this type of service the dispatcher can "ring" the driver of a vehicle but neither can conduct a conversation. This ring can be understood by the driver to be a demand that he call the home base as soon as he is able to reach a public telephone, or that he should follow some prearranged instructions.

Ours is the first, or general, two-way service.

Call Rates and Service Charges

THE prevailing rates for a three-minute general service message within the subscriber's home area range from 30 to 40 cents, depending on the distance of the call. The charge for a one minute two-way dispatch call is 15 cents. The one-way signal service is available on a $5 monthly service rate.

The rates for most calls will not vary with the location of the vehicle. If calls are placed outside of the home area, toll rates apply.

Except for the one-way signalling service, the equipment is essentially the same as for private, two-way radio installations. It may be provided either by the customer or the telephone company. If furnished by the telephone company, as in our case, an initial installation charge of $25 is made, followed by a $15 monthly service charge. Except for calls used, no additional charges are made.

As with business and domestic telephone service, certain minimum monthly call charges are made. In our case, we pay $7 a month for which we are allowed 20 three-minute calls. Overtime is charged against minimum-call allowance and, after these are used, then on an individual call basis.

Our mobile telephone bills have been averaging $25 per vehicle per month, including the $15 mechanical service charge. [ED. NOTE: By way of cost comparison, a large fleet operator whose trucks are equipped with two-way radio reported (CCJ, Feb. 1947, P. 160) that his costs were $1 per day per truck.]

Davidson's Dividends

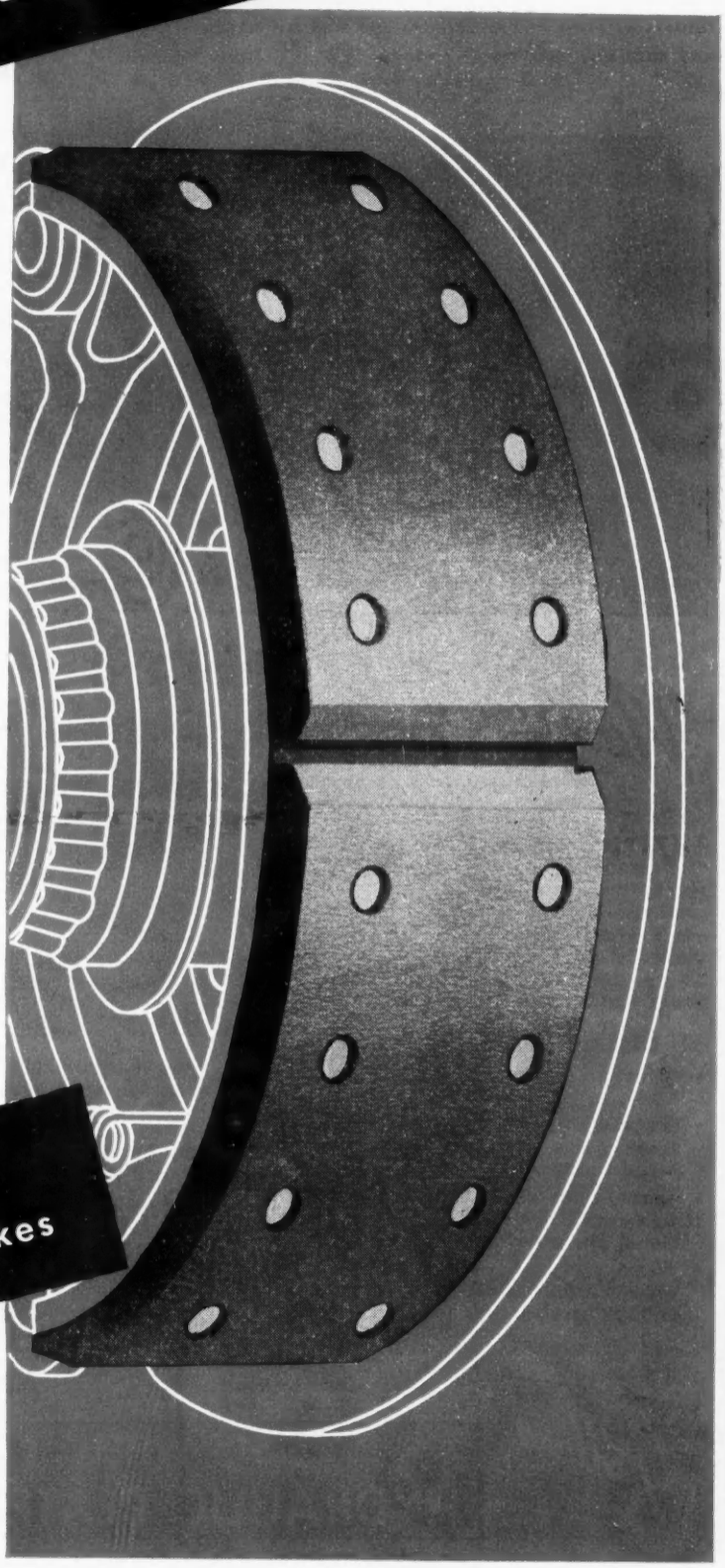
FLEET operators may be motivated by several reasons why they have, or would like to have, mobile telephone service. From practical experience, we find the following nine points offer advantages that we did not enjoy prior to the installation of this equipment.

1. Mobile telephone keeps our city and road supervisors in immediate touch with operating terminals.

At present only our supervisors are

(TURN TO PAGE 158, PLEASE)

"Longer-Life" Thermo-Blocks Give You The Brakes



On all heavy duty reline jobs Thermo-Blocks pay off by lowering maintenance costs, shortening down-time. Why? Because Thermo-Blocks are designed for long life, built for heavy duty service. Even under the most rugged operating conditions, their performance is sure and dependable.

Remember to specify Thermo-Blocks —the linings that give you the brakes —for every heavy duty reline job. Ask for the Thermo-Blocks specially made for your units. Prove to yourself how much longer they wear.

Thermoid

The "Longer-Life" Line for Heavy Duty Service

Thermoid Company
Trenton, New Jersey

Thermoid • The Lining That Gives You The Brakes

Mobile Telephone

(CONTINUED FROM PAGE 156)

equipped with mobile telephone. We expect, in the not too distant future, to equip most, if not all, trucks with telephones. Then this advantage will be even better, although even now mobile telephone is a big asset to our operations.

2. Road supervisors can warn terminals of road blockades, tie-ups and any unusual road conditions.

3. Road supervisors can secure aid immediately for trucks disabled in spots inaccessible to public telephones.

4. City supervisors can be contacted immediately to investigate undue delays at pickup and delivery points.

Countless hours are wasted in this way. In a matter of minutes our city supervisor can personally investigate such conditions and rearrange points of call to eliminate or reduce waiting time.

5. City supervisor can be instantly contacted to move helpers from one section of the city to another, wherever needed.

6. City and road supervisors are instantly available to investigate accidents and take over at scenes of accidents.

7. City supervisor can keep dispatcher informed of movement of vehicles to permit arrangement of schedules to the best of advantage.

8. Personal safety and crime prevention..

We never have had the opportunity to use our mobile telephone equipment for this purpose.

9. Ability to reach any telephone, anywhere.

Disadvantage

WE WOULD be presenting an incomplete picture if we did not touch on what, in our experience, has been a negative angle—although up to the present not a great disadvantage or handicap.

Mobile telephone service has almost the same disadvantage as a four-party telephone line in domestic service. There have been times when our road or city supervisors lifted their telephone receivers and heard other mobile subscribers talking. These instances occasioned delays, though seldom over a minute or two.

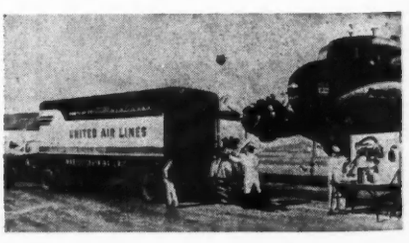
However, to offset this disadvantage, in an emergency, these calls may be interrupted, by explaining to the speakers the nature of the emergency, and faster service obtained. The cost of mobile telephone service, being higher than domestic four-party service, also is a deterrent to long-winded conversations.

If there are other disadvantages, we, as yet, are not aware of them.

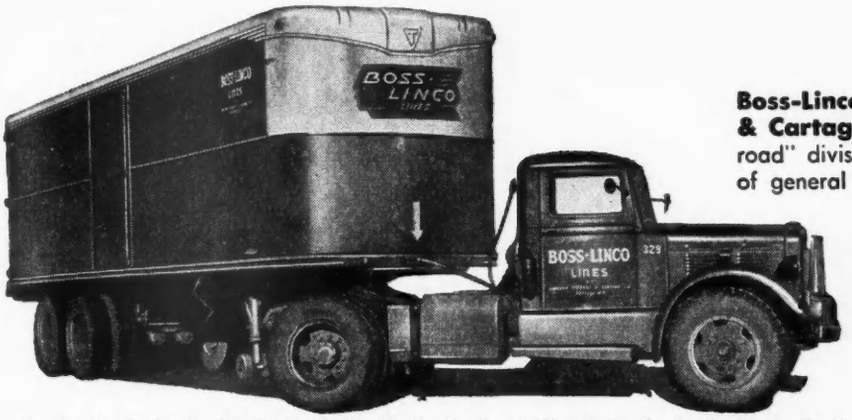
END

(Please resume your reading on P. 72)

Air Training Unit

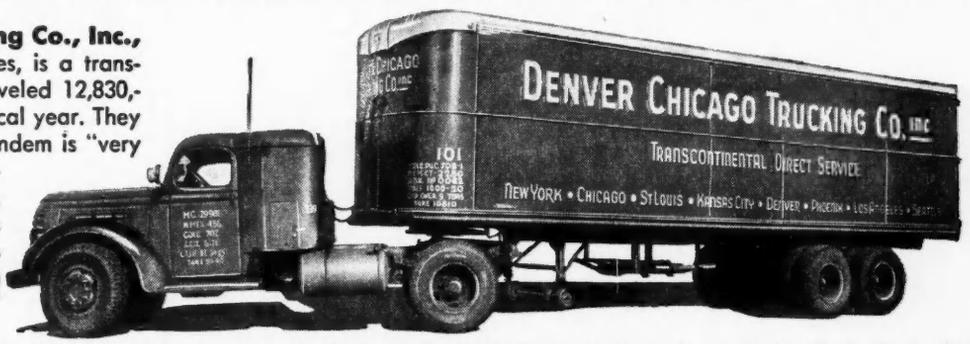


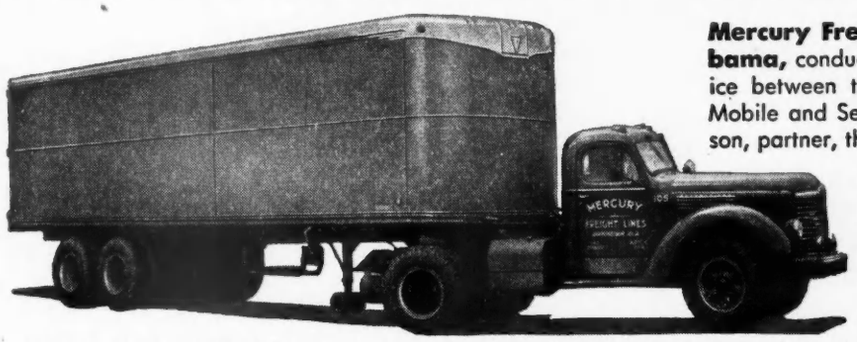
United Airlines new mobile training unit, mounted aboard a Fruehauf van, carries mock-ups and other equipment for on-the-ob mechanic instruction and upgrading courses



Boss-Linco Division of Lincoln Storage & Cartage Co., Buffalo, is the "over-the-road" division operating as a common carrier of general commodities in the states of New York and Pennsylvania, within 200 miles of Buffalo. Mr. Charles J. Palisano, partner, says "Trailmobile's tandem is most satisfactory . . . Trailmobiles have proved far stronger, more economical than other trailers for common carrier service."

Denver Chicago Trucking Co., Inc., Denver, covering 22 states, is a transcontinental carrier that traveled 12,830,648 miles during the last fiscal year. They use 80 Trailmobiles. The tandem is "very good, very well constructed," states Mr. Felix Cohen, Vice-President. He is also convinced Trailmobiles are "the easiest-pulling trailers, save gasoline, tires."





Mercury Freight Lines, Birmingham, Alabama, conducts an efficient common carrier service between the Alabama cities of Birmingham, Mobile and Selma. According to Mr. J. H. Anderson, partner, they consider all of their Trailmobiles to be "outstanding trailers." He feels that the newly developed, simplified tandem is an important reason for Trailmobile superiority. Other advantages: "excellent" service and lower operating cost.

For Sensational New Developments Like The "Rocking-Beam" Tandem . . .

The Trend is to TRAILMOBILE

Another Trailmobile first! Trailmobile has built a new tandem employing entirely new principles. The secret? Two simple "rocking-beams" equalize loads on both axles, reduce number of moving tandem parts from twelve to only two. All parts are standard . . . interchangeable . . . available "everywhere." This simplified Trailmobile tandem sharply decreases lubrication and upkeep costs and permits heavier payloads through the use of a really effective, practical tandem arrangement.

Just look at a new Trailmobile. You'll see a basically improved undercarriage; new structural advances like the "diamond" construction of the sides; a 50% more efficient prop . . . plus other trailer improvements which mean lower upkeep and maintenance costs. No wonder hundreds of carriers like those quoted above are following the nation-wide TREND TO TRAILMOBILE.

A coast-to-coast network of 73 Customer Service Centers is ready and willing to demonstrate to you in detail all the many advantages of Trailmobile performance. There's a Center near you. Why not call on a friendly Trailmobile Branch today?

THE TRAILMOBILE COMPANY • CINCINNATI 9, OHIO

Rubber Round-Up

(CONTINUED FROM PAGE 41)

road operation. Firestone is the major proponent of wire cord tires for highway use. The company recently announced such a tire after seven years of experimentation. Claims for it are that it runs cooler under heavy loads at high speeds, has never been known to blow out, gives greatly increased mileage, and has great body strength that permits recapping several times. Competitors also have wire cord tires under development but they contend that their chief use is in off-the-road operations rather than highway use. They point out that 30 per cent higher inflation is necessary with a much harder ride. Firestone counters that charge with the statement that the wire cord tire dissipates heat more readily and runs 25 per cent cooler than conventional tires so that, while the initial pressure may be higher at the outset of the trip, the heat build-up in fibre cord tires eventually brings the pressure up very nearly to that of the wire cord tire anyway.

Other advantages they cite for it are that because there is no growth or stretch, the wire cord tire wears up to 50 per cent longer and that rubber adheres to wire much better than to cotton or rayon, which improves resistance to separation within the body of the tire as it flexes. Firestone claims to have greatly improved the tire building process to minimize the effect of flexing on the wire cord. In addition, because of its greater strength, fewer plys of wire cord are required than with cotton or rayon. Furthermore, its properties are not affected by heat. While competitors say that facilities generally do not exist in the field for repairing wire cord tires, Firestone states that repairs can be made easily by vulcanizing cuts or gashes with no harm to the tire carcass.

Other companies, however, still feel that the high cost of wire cord is prohibitive and that its other shortcomings do not make it too practical an idea at the present state of development. As with nylon, the supply of the type of wire used is still utterly inadequate for volume production. In fact, it is estimated that there is not enough wire produced in this country to build 3000 truck tires a month. Expansion in wire production will have to come before the price can be reduced to a reasonable level. The future of this type tire apparently is tied in with the economics of cost and experience of operators under actual load conditions over a period of time.

Cotton & Fibre Glass

WHILE practically no truck tires, except perhaps a few smaller sizes, currently are being made with cotton cord, tire manufacturers are not yet willing to say that cotton is entirely out of the picture. They say that research may eventually overcome some of the present shortcomings of cotton cord and that price also might be a factor at some future date.

Other cord material that is being studied is glass fibre. While this material is said to be the strongest yet considered, it is very brittle and does not stand the flexing action of tires under load. Development work is going along but engineers say it will be a long time, if ever, before fibre

glass cord can be considered as a likely possibility.

A very important advantage of the rayon, nylon, or wire cord tire is that much thicker treads and a closer tread design can be used than with cotton because of their heat dissipating qualities. A closer tread is one in which there is less space between the block segments which results in more contact of tread surface with the road and consequently increased mileage. A thicker tread gives more wear before recapping is necessary.

★ ★ ★

Ply-Rating

Fleets are advised that the term "ply-rating" is now used by the rubber industry to "identify a given tire with its maximum recommended load when used in a specific type of service." It is an index of tire strength and does *not* necessarily represent the number of cord plies in the tire. It it is necessary to determine the actual number of plies used, specific requests for this information should be directed to the tire manufacturer's representative.

★ ★ ★

Recapping Will Stay

TIRE companies all agree that there is no question about recapping of truck tires as an economic practice being here to stay. Some over-the-road operators say that recapping is not too economical for tractors but many of them put new tires on the tractor and use recaps on the trailers. The industry also reports that there is a definite trend away from the 20 in. truck tire to the 22 in. size.

Passenger Car Tires

WHAT is coming in passenger car tires still is not too certain although rayon and nylon cord construction already is appearing as a premium feature. The proportion of synthetic and crude rubber still is tied in with problems of world economics, and national defense considerations which dictate maintaining a definite capacity of synthetic rubber production in this country. No one is quite sure yet what tonnage the government will set as the ultimate synthetic capacity.

One tire engineer predicts that a combination of synthetic and natural rubber, possibly in the ratio of 30 to 40 per cent synthetic and balance natural, will give an excellent tire. He estimated that the difference in gas mileage between all-rubber and the ultimate combination rubber-synthetic tire will be negligible.

During the past year, there has been some comment in the various trade publications about the possibility of silicone rubber for tires. Engineers say that while the silicone rubber has a definite place for some applications they see little possibility for its use in tires since it has low stretch or flexing properties.

The last minute word from Goodrich reveals that its new tubeless tire is undergoing extensive tests. Presumably to be offered only in passenger car sizes and definitely in limited quantities for some time to come, the tubeless tire embodies rayon cord construction. Company claims for the product include improved riding quality, high bruise resistance, remarkable air retention and puncture sealing features.

END

(Please resume your reading on P. 42)

Chevrolet Trucks

(CONTINUED FROM PAGE 69)

water supply can be shut off in warm weather to allow circulation of fresh cool air.

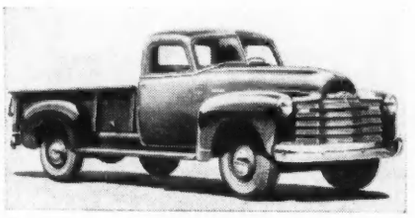
The deluxe cab is optional on conventional models, features corner panel windows to eliminate blind spots, with reveal and garnish moldings of stainless steel. The corner panel windows are supplied as standard in all c. o. e. cabs and may be obtained separately as an option in conventional cabs.

Improved insulation, thicker dash and floor mats provide a cooler and quieter interior. All cab sheet metal subject to wheel splash or moisture is coated to prevent rusting.

New Bodies, Frames

PICK-UP bodies for the new line have been strengthened and their utility increased by elimination of the wheelhouse.

Panel bodies in the line are entirely new and stronger through redesign of floor sills, body side top rails, and top upper rails. In addition there is



The ¾-ton pickup. New body has a usable width of 50 in. for the full length

greater use of rust inhibiting paints for body protection. On the Model 3105 the body has 150 cu. ft. of load space, up 13 per cent, and will accommodate up to 10 ft. of length for merchandise alongside the driver. The Model 3805, with 6700-lb. g.v.w. has a load space of 202 cu. ft. and will accommodate merchandise up to 12-ft. 6-in. in length alongside the driver. Panel bodies are wider, have a minimum width inside the wheel house of 48¼-in.

Major changes have been made in frame construction, these being reinforced with shear plates on the 3100, 3600, 3800. On Load-master models the side rails have been extended beyond the front springs to support the bumpers. Frames for heavy duty models—over 11,000-lb g.v.w.—are entirely new, feature greater size and section modulus with a frame section 8⅞-in. in depth, 2⅞-in. flange width, and ¼-in. in thickness. This frame is used in all models of the Series 4400, 4500, 5000, and 6000 (except 6702), and is included in the heavy-duty option group for 4100 Series.

Springs for all models carry new ratings stated in terms of weight on the tires at the ground, and all springs have capacity equal to or in excess of axles and tires.

Wide base wheels have been adopted as standard equipment, producing straighter tire sidewalls, better road contact, and increased air volume under load.

Fleetmen now are offered a choice of 12 colors or any two-tone color combinations, maroon and beige being added to the former range.

END

(Please resume your reading on P. 70)

TEMPERATURES . . . TERRIFIC RUBBING SPEEDS . . .

Oil Saves Time!

TO MINIMIZE "LAY-UP" TIME . . .

HELP DECREASE MAINTENANCE AND REPAIR COSTS—

Use Mobilube Gear Oils!

IT'S NOT THE PRICE per barrel—but the time and money lost through unnecessary "lay-ups" that determine the cost of a gear lubricant. That's why experienced operators say the *best* kind of oil is *cheapest* in the long run. And that's why so many of them use Mobilube Gear Oils.

These high-quality mineral oils provide maximum protection against wear, rust, corrosion and scoring. They are exceptionally stable, sludge-resisting, non-foaming . . . free of soaps and fillers.

Give your gears full protection with the right Mobilube Gear Oil for each job. Your Socony-Vacuum Representative will be glad to look over your equipment and make the correct recommendations. And for aid in solving tough maintenance problems, ask him about Socony-Vacuum's complete Fleet Operators' Service.

Tune in THE MOBILGAS PROGRAM—Monday Evenings, 9:30 E.D.T.—NBC

Hall-Scott Engines

(CONTINUED FROM PAGE 78)

the upper crankcase assembly. This eliminates the need for cylinder sleeves and is available on a factory exchange basis at a substantial saving over the replacement cost for a complete upper crankcase and block as required in most standard engines. The bore of this replaceable unit constitutes virtually the only difference between the three models.

The same accessory shaft which drives the camshaft chain continues to a point just forward of center from which a spur gear drives the distributor. From the same point a gear train goes out to an external shaft which drives the air compressor at one end, the generator at the other. Only the six-blade fan and water pump are driven by the dual belts at the forward end. The governor, of Hall-Scott design and manufacture, is driven from the camshaft chain. A 12-volt generator is standard.

A 2½-in. Zenith up-draft four-venturi carburetor is standard on the gasoline models, which the regulator for gaseous fuels is made by the American Liquid Gas Corp., Los Angeles.

Dual horizontal oil filters and a water-cooled oil cooler, both mounted at the front right side are standard. It will be noted that the intake manifold is on the left, exhaust on the right, with a heating duct across the top of the engine on the gasoline-powered models (not on the butane models).

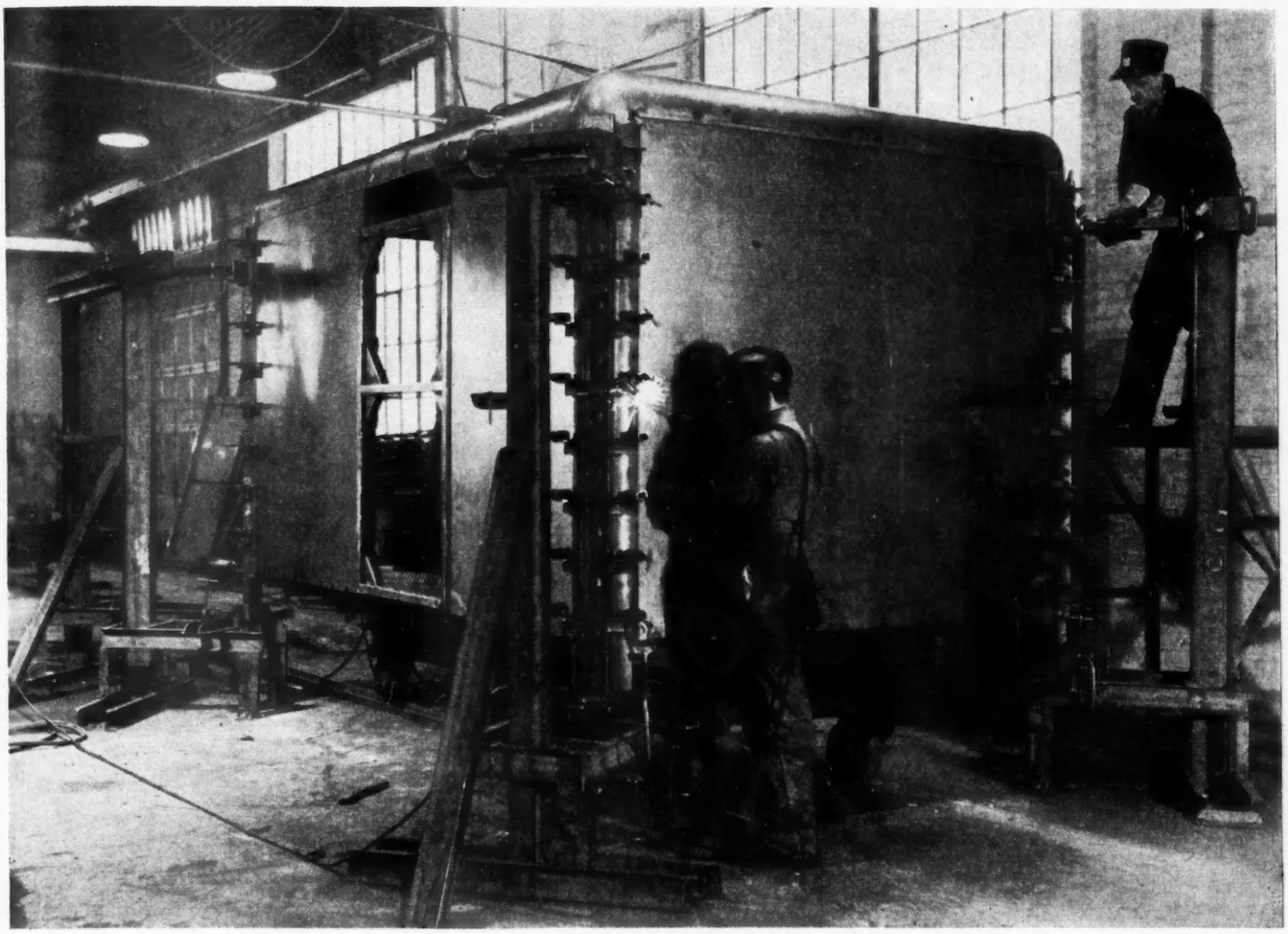
The alloy-steel, heat-treated crankshaft has seven main bearings, 3¼ in. in diameter with length ranging from 1 19/32 in. to 3⅛ in. Slip-in (precision) bearings are of steel-back, copper-lead construction.

Although the 2200 lb. weight of the 400 Series engine is necessarily high, it will be noted that in most instances it is considerably under that of most diesel models of much less horsepower.

Regional parts depots are located in Boston, New York, Philadelphia, Chicago, Dallas, Los Angeles, Berkeley and Seattle. In addition many truck manufacturers who are using the engines maintain their own parts supply.

END

(Please resume your reading on P. 80)



A New "HIGH" In *Body Appearance, Utility and Economy*

The illustration above shows one of many stations of the assembly line of the Oltman-O'Neill Company of Detroit. They build standard units in large volume and sell through truck and equipment dealers.

This shop is efficiently set up and capable of producing over 5,000 complete truck body units per year. In this operation they are using PARISH Universal Body Sections 100%, which, in their opinion, offer the ultimate in efficient design, ease of fabrication and economy.

This is possible because of PARISH'S exclusive, complete line of prefabricated, high-tensile steel body sections which contain all of the engineering features developed at PARISH since its first pioneered Universal Body Sections. It is no accident that PARISH has the largest and most complete setup of tools and equipment for the production of truck and trailer frames and body sections.

Hundreds of body builders are using PARISH Body Sections because of the following features they make possible in truck and trailer bodies:

- **Individualized Design**
- **Attractive Appearance**
- **Simplified Layout**
- **Quicker Delivery**
- **Strength Without Excess Weight**
- **Easy Maintenance**

Be sure to specify P A R I S H Universal Body Sections and Heat-treated Pressed Steel Frames. You can rely on the experience of the country's many leading automobile, truck, trailer and body manufacturers. Catalogs A and B will be sent upon request to Body Manufacturers.

Pressed Steel Heat-Treated Frames for Automobiles, Trucks, Tractors and Trailers and Universal Body Sections

PARISH PRESSED STEEL CO. *Subsidiary of* **DANA CORP.**
READING, PA.

Western Representative: F. Somers Peterson, 57 California St., San Francisco, Cal.

Lenoir Case

(CONTINUED FROM PAGE 70)

machinery used in the manufacture of such furniture.

At the same time the company, in effect, asked for dismissal of the application, and requested determination of its status as to whether it is a common or contract carrier subject to the motor carrier act or a private carrier not subject thereto, except for the provisions dealing with safety, maximum hours of service, and standards of equipment.

The company, operating five trucks in long distance hauling and six or seven trucks in inter-plant service, considered itself a private carrier and the ICC examiner so found in recommending dismissal of the application.

The examiner, after appropriate hearings found that the company had unsuccessfully attempted to dispose of its transportation business; that only about 15 to 20 per cent of the annual output is transported in the company's vehicles; that company equipment is used only when the customer is pressing for delivery; and that the company has never held itself out as a common or contract carrier.

Continuing, the examiner stated that "there is nothing in the record to indicate that the applicant is at the present time transporting these commodities for any other purpose than for the furtherance of its non-carrier enterprise and incidental to the manufacture of furniture. The feature that motivates applicant's operation is service to its customers and the transportation is performed without regard to any profitable return for the cost of performing such transportation."

Operations at a Loss

The examiner also quoted figures to show that "the operations are performed at a loss and it could not be considered that it was operating the trucks for profit."

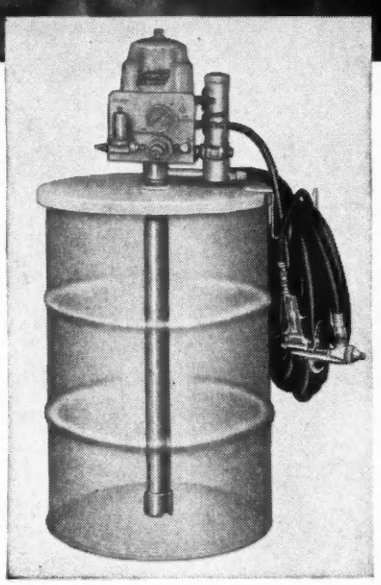
Laying the groundwork for his recommendation of dismissal the examiner further stated: "It is clear that insofar as applicant transfers furniture and materials used in the manufacture of such furniture it is carrying its own property as a private carrier. The sole question here presented for determination is whether the transportation by applicant of the prescribed commodities from its plants and delivered to its customers at their places of business constitutes carriage for-hire requiring authorization from the Commission for its continuance or whether it is private carriage. In Woitishek Common Carrier Application, 42 M.C.C. 193, and many other cases too numerous to cite, the essential differences between these types of carriage are discussed at some length. In the decision in the Woitishek case the Commission found that applicant was primarily engaged in a bona fide non-carrier business and that the transportation performed therein was incidental to and in furtherance of such non-carrier business without any purpose of profit from the transportation as such, and that accordingly, applicant had not been shown to be either a common or contract carrier. As previously stated, applicant herein has been engaged in the furniture business for many years, having transported the commodities involved to various points in numerous states in connection with that business. Applicant's present method of doing business . . . is sufficient in the opinion of the examiner to establish that such operations are performed solely as an incident of, and in furtherance of, a non-carrier business without any purpose to profit from transportation as such. Therefore, it is concluded that the described operations are those of a private carrier as defined in section 203 (a) (17) of the act, for which a certificate or permit is not required."

In reply to a request from for-hire interveners that the ICC review its policy set forth in the Woitishek case and divorce all operations for compensation from private carriage, the examiner maintained that this question is answered in the Woitishek case, wherein it is stated: "In short, each case must be determined upon its own particular facts, and neither the receipt of compensation for transportation identifiable as such nor the existence of some non-carrier business to which the transportation may be incidental is alone conclusive."

(TURN TO PAGE 172, PLEASE)

Warner to make you money!

Any man can be quickly trained to do a perfect and profitable job of applying underbody materials.



The complete Versatal unit fits any standard drum. Operates off your regular air line or compressor.

Does the Job Faster, Easier, Better at Greater Profit

All over America, car service men are discovering a gold mine in the spray application of underbody coating.

Now, the famous Alemite Versatal spraying equipment has been engineered to do underbody coating work faster, easier than any other make.

The powerful air operated pump handles coating materials direct from original drums, either located in the work area or in some adjoining room. There's no handling of materials—no mess, no waste.

The hose is light and flexible—easier and less fatiguing to handle. The average operator can spray 5 to 8 cars without changing the drum. And, each sprayed car represents a net profit of around $17!

READ WHAT USERS SAY:

"New and old cars alike represent a market for underbody coating. The first 5 months we took in $3700 at an average profit of 33⅓% thanks to the new Alemite Versatal Equipment." (Name on request)

"Car owners come in and request this protection. They like the way underbody coating deadens road rumble, squeaks and rattles. They want to be sure their new car won't rust out from below. Our average profit on each job is around $20." (Name on request)

• • •

These are just some of the hundreds of Versatal users who report phenomenal business, easy sales and high profits on underbody jobs. For complete details, costs and installation data, contact your nearest Alemite Distributor, or write Stewart-Warner Corporation, 1876 Diversey Parkway, Chicago 14, Illinois.

CORPORATION

Another Product of STEWART WARNER

Lenoir Case

(CONTINUED FROM PAGE 168)

As was expected, the examiner's report brought forth immediate protest from the for-hire interests. The private carriers also found several allies who filed briefs with the Commission supporting the report.

For-Hire Viewpoint

The first to file exceptions to the Examiner's report in the Lenoir Case were the National Tank Truck Carriers, Inc., and the Regular Common Carrier Conference of the American Trucking Associations, Inc. On Feb. 10, 1947, these interveners asked that the ICC review "the basic characteristics of private carriage and find that when a person transports goods of which it is the owner or bailee in its own vehicles as a private carrier in furtherance of its commercial enterprise, it cannot charge and receive compensation which exceeds its cost of engaging in the transportation without violating its status."

Also emphasized was the point that the transportation charges which were made by Lenoir were comparable to the common carrier rate of for-hire carriers.

"There is need for a re-examination of what constitutes private carriage," according to these interveners, "for the issue involved in this proceeding of whether a private carrier should receive compensation goes to the very heart of the relationship betwen private carriers, on the one hand, and for-hire carriers, on the other. The standard presently used by this Commission in determining whether a carrier is or is not a private carrier is insufficient. This Commission has had this matter before it previously, and has not considered it of enough importance, apparently, to use the compensation test as a vital test."

Referring to the Woitishek case, these interveners pointed out that at that time the Commission stated that "private carriage is involved where persons are primarily engaged in some manufacturing or merchandising undertaking, and as an incident to their primary business, and without a purpose to profit therefrom, perform certain transportation *for which they received compensation which is identifiable as compensation for transportation and in some instances included a measure of profit.*"

It is with the philosophy expressed in the italicized portion above that these interveners maintain the ICC erred. They claim that the Commission "is permitting and condoning a practice which is not only not provided for by section 203 (a) (17) of the Act, but is also expressly excluded because it is a function of only for-hire carriers under the statute. Hence, the receipt of compensation is contrary to law."

On April 1, 1947, the Lenoir Chair Co., through its attorney, Fate J. Beal, filed a reply to the exceptions noted by the foregoing interveners. Mr. Beal's primary points were the fact that the Lenoir Company did not hold itself out as a contract or common carrier and that the Commission should stand upon the principle laid down in the Woitishek case, namely, that the single element of compensation is not sufficient to void the status of a private carrier. He also noted that three for-hire carriers represented at the examiner's hearing offered no objection to the classification of the Lenoir Company as a private carrier.

The Private Carriers Conference of American Trucking Associations, Inc., on April 8, 1947, filed a brief with the ICC requesting affirmation of the examiner's report and expressing opinions in direct opposition to those of the ATA for-hire conferences.

Private Carriers' Position

"If the Commission were to undertake any other interpretation at this time, thousands of manufacturers and distributors would find themselves in violation of the Commission's regulations, and would be forced to either abandon their truck operations or to qualify as for-hire carriers," the brief declared.

"Surely a finding which would have such far-reaching effect should not be made," according to the brief, "unless it is clearly shown from the record and argument, which it is not, that the Interstate Commerce Commission has thus far been

(TURN TO PAGE 174, PLEASE)

GEMMER EASY STEERING IN ALL MODELS OF FEDERAL TRUCKS Including the 55,000 lb G. V. W.

Federal Trucks, with their excellent reputation for long, dependable service in toughest operations, are 100% equipped with Gemmer Easy Steering —including the 55,000 lb G.V.W. model for heavy duty and off highway work. Gemmer Steering makes these jumbos easy to handle.

Gemmer is the simplest, sturdiest, most compact, most efficient type of steering gear. Steering is always firm, responsive, positive, with absence of rubbery feeling or wander. Abundant power for parking eases the labor of maneuvering. Extremely durable, a Gemmer Steering Gear will last the life of the vehicle with reasonable care.

3126

GEMMER MANUFACTURING COMPANY

6400 MT. ELLIOTT • DETROIT II, MICHIGAN

Use postage-paid card inserted at page 65 for free information on advertised products

Lenoir Case

(CONTINUED FROM PAGE 172)

wholly in error on this point and has been acting contrary to law as set forth in the basic definitions in the Act."

Two days later, the National Council of Private Motor Truck Owners, Inc., which has become the most outspoken of the private carrier interests, filed a vigorous dissent to the exceptions filed by the ATA interveners.

The Council asked the ICC to establish a "primary business" test as the "*only proper one for distinguishing between private and common or contract motor carriage.*"

The Council called upon the Commission to "make a clear-cut decision which will put an end to attacks on the rights of private motor truck owners such as those now being pressed by the ATA for-hire carrier interests not only in the Lenoir case, but in the Schenley Distillers Corp. case also pending before the ICC."

"In the Lenoir Chair Co. case," continued the Council, "the ATA for-hire carrier interests have attacked the principles laid down in the Woitishek case and have called upon the ICC to reverse that part of its decisions which applied both a 'for compensation' test and a 'primary business' test. Instead, these interests have asked the Commission to apply an arbitrarily restrictive 'for compensation' test as the sole measure of distinction between private and for-hire carriage.

"The expression of principles in the Woitishek case should be reviewed, but not, as the ATA interveners suggest, for the purpose of abandoning the 'primary business' test. Instead, any idea of a separate 'for compensation' test should be abandoned, and the 'primary business' test should be recognized as the only proper and lawful test.

"There is no such thing as a separate profit or loss from the operation of trucks in an enterprise which is primarily something other than the operation of trucks. Private motor truck operation, therefore is not susceptible to a test of whether it is 'for compensation'—no matter whether 'compensation' be considered profit, exact reimbursement, or something less."

In substance, the Council's brief requests the ICC "to find and declare that all persons, including the applicant, whose operation of motor vehicles is incidental to and in furtherance of a commercial enterprise other than transportation are private carriers, rather than common or contract carriers."

Bringing the shipping interests into the picture, the National Industrial Traffic League, on May 2, filed a petition of intervention which supported the position of the National Council of Private Motor Truck Owners, Inc.

The League in general opposed the position taken by the National Tank Truck Carriers, Inc. and the Regular Common Carrier Conference of the ATA, and in contradiction of their contentions urged that there can be no so-called "for compensation" test for application to bring under regulation concerns using trucks privately in furtherance of their commercial enterprises.

The League stated that it particularly opposed "the effort to broaden the responsibility and jurisdiction of the Commission so as to extend to interstate movements of goods by business concerns who do not desire or hold themselves out to perform transportation in any real sense, but are engaged in private business, where there is no subterfuge or evasion by which an operator of motor carrier vehicles is really seeking to haul goods for hire and obtain exemptions from regulations as to the business of transportation.

"There seems to be an effort among organized motor carriers to destroy so-called private transportation and prevent or greatly handicap business concerns from operating trucks as part of their business facilities. To destroy and hamper such functions of private business would be greatly detrimental to the public interest. Such broadening of the Commission's jurisdiction would lay such great administrative burden on the Commission as to endanger the efficiency of its work as a whole, because the private operation of trucks throughout the United States."

The Interstate Commerce Commission has not indicated when decisions will be forthcoming.

END

(Please resume your reading on P. 71)

BOWER TAPERED SPHER-O-HONED ROLLER BEARINGS

LOOK FOR THIS TRADEMARK

This trade mark is a symbol that identifies a certain Bower bearing type by emphasizing its distinguishing features of design. Bower Tapered Spher-O-Honed Roller Bearings, to which this trade mark applies, incorporate in their design three major advantages that are highly effective in operation. • They are: (1) spherical contour of roll heads where they contact the inverse spherical raceway of the cone flange, (2) a liberal oil groove and (3) micro-inch smoothness of raceways of both cup and cone. • The combined advantages of these three design features make it possible to permanently install Bower Tapered Spher-O-Honed Roller Bearings without the necessity of a running-in or wearing-in period or any "final" adjustment. Bower design is most effective where most important.

SPHERICAL ROLL END

Roll end contact shown at left in two ways. At center roll pressed into theoretical sphere to a position where contact (light gray ring) is flush with and conforms to the curvature of the sphere and (upper right) cross section showing conformation with perimeter of sphere.

OIL-IMPORTANT GROOVE

Here (at left) phantom drawing showing how roll operates against cone flange and the relative position of the oil groove (lower right) which holds a generous supply of lubricant to guard against oil failure at this critical point where the lubrication problem is most serious.

HONED FACE LIFT

Three stages in surface finish—rough grinding, finish grinding and Bower's honed finish that lays bare the crystalline base metal with smoothness and precision as fine as three millionths of an inch—a tolerance that is measurable only against the wave length of light.

BOWER ROLLER BEARING COMPANY
DETROIT 14, MICHIGAN

Tri-State Trip

(CONTINUED FROM PAGE 47)

that he normally traded after three years, for four.

So much for brief generalization. In order to bring some organization into the discussion of so many types of fleets visited, it seemed best to set up our story on a vocational basis rather than on a pattern of the routes followed.

Public Utilities

BECAUSE the Niagara Hudson Power Co. and its three principal operating subsidiaries blanket such a large part of New York State, visits to these and other utilities along the way provided a good starting point and a continuing link throughout much of the trip. As in the case of every large utility, the problems of maintaining a widely scattered and widely diversified fleet were at once apparent, and it was interesting to see how these problems were handled by different concerns. All of them, of course, had a central operating headquarters at which central records were maintained and from which overall policies were determined, and in every case a good headquarters garage was maintained. But right there the similarity stopped. Some were operating well-equipped branch garages at strategic locations to which vehicles in certain districts were routed for periodic maintenance and overhaul. Others farmed out nearly all maintenance except that handled by the central shop.

Only two had instituted a complete unit overhaul plan in which electrical equipment, carburetors, fuel pumps and in some cases even complete engine block assemblies were overhauled at the central shop and shipped to branch shops for replacement. One such installation was greatly aided by the inauguration of a daily courier service between some 40 locations within the area. This was accomplished by company-owned vehicles and made possible through the requirements of the accounting department in handling daily records. The fleet superintendent, however, was able to make good use of this fast courier service with daily shipments to every part of his fleet. The route even passes the factory of a truck manufacturer whose products made up a large percentage of the fleet's vehicles, thus enabling the operator to make daily pickups at the factory's very excellent parts depot.

Another utility fleet which had a not-so-frequent courier service was using two 1-ton trucks fitted with large metropolitan-type bodies for the purpose, putting some 3000 miles a month on each and with excellent results. Despite this unusual use, directly opposite from the designed purpose of the vehicle, he found the jobs standing up and performing extremely well in long distance work. Of course, the loads were light, but often included a 3000-lb. transformer at that.

The utility men were all engrossed in the design, procurement and, in many

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with

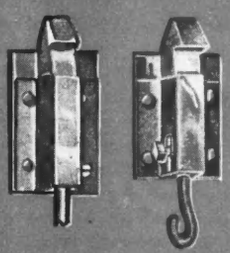
International Metro Bodies -HANSEN Equipped...

MODERN body hardware by Hansen contributes its share to the very latest advances of engineering and industry. For example, note the International Metro Truck above, shown supplying refrigerated air to the interior of an airliner. A product of the International Harvester Co., this truck and similar units are fitted with Hansen hardware.

Hansen Slam-and-Take-up Lock is used on the rear doors of these trucks. Designed for reliable, easy slam-and-take-up action, this lock has an advantage not found in ordinary locks. The double-angle striker bolt is kept under constant tension. Result—it takes up all play in the closed door. Doors are kept tight and rattle-proof. Extensively used on custom-built bodies.

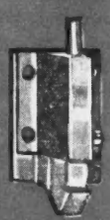
Hansen makes a complete line of Commercial Body Hardware—Locks, Hinges, Handles, Regulators—and automatic one-hand Tackers. What are *your* requirements?

Request Details



Illustrated is the No. 115 Hansen Slam-and-Take-up Lock. Wedge-shaped striker bolt takes up the slack and insures tight, rattle-proof doors. Rods, ⅜" dia., 30" long, can be cut to length desired. This lock is made in various combinations.

Custom-built bodies—buses, trucks, trailers, tanks—are better, stronger, more durable and require less upkeep when Hansen-equipped. Often outlasting the bodies on which installed, Hansen Hardware withstands the severest usage.



HANSEN
HARDWARE for Commercial Bodies

A. L. HANSEN MFG. CO.
5047 RAVENSWOOD AVE., CHICAGO 40, ILL.

Tri-State Trip

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cases, fabrication of highly specialized equipment to do specific jobs. In many instances the proximity of large industrial machine shops set up primarily for the use of other departments was helping the fleetmen materially in the accomplishment of these ends. So many of these ideas seemed unusual that we are presenting a picture story of some of the highlights in a forthcoming issue. Among them is specially designed rig which for the first time combines the hauling of dynamite and dynamite caps on a single vehicle replete with power take-off, air compressor, air tools and air winch. Another is a high-speed telescoping tower truck, and still another is the installation of dual generators, batteries and regulators in a radio-equipped Ford V-8.

Another development of common interest to many utility men, with large numbers of vehicles equipped with power take-off mechanism for many purposes, was the installation of recording tachometers which not only provided an accurate basis of engine mileage for maintenance use, but also provided an accepted means of determining gas tax refunds allowed for non-highway use.

For-Hire Carriers

IT IS always intriguing to note the difference in operating methods between the private carriers, who often might be accused of operating their trucks only as a sideline venture, however important that sideline may be, and the common and contract carriers whose life blood stems from the operation of their vehicles. Where the utility man, for instance, considers 3000 miles a month as high-mileage usage, the for-hire carrier thinks nothing of 6000, 7000 or even 8000 miles a month. And where the average private carrier struggles hard to reduce his operating cost, the out-and-out truckers know that if they don't keep costs at the rock bottom, their days are numbered. The result is seldom a really fancy shop among the for-hire groups, seldom even particularly good equipment from an eye-appeal standpoint. But contrary-wise, invariably one finds good, sound, business-like maintenance that gets unfailing performance out of vehicles that often long since have past their time as measured by any mathematical equation or elaborate depreciation plans.

The for-hire carriers visited on the recent trip were no exception. Their shops were often overcrowded, under-equipped and just plain dirty. But out of them the trucks kept rolling efficiently and on schedule. Many were planning new quarters or were in the midst of transfer. Our friends at Associated Transport, concerning whose operation we have just completed a series of four articles by General Superintendent of Maintenance D. V. Gearwar, had big things afoot in western New York. At Syracuse they had purchased a brand new building originally designed as a pottery, but for which the original plans had not materialized. It just happened that the structure was a one-story affair about 100 ft. wide by 400 ft. long with pre-formed concrete roof and concrete floor. Only a few minor alterations were in progress to convert it to a first-class major overhaul depot, which will take its place with the organization's other two major overhaul bases at Charlotte, N. C. and Springfield, Mass.

At Buffalo, the same company had pulled up stakes from its crowded downtown location and moved some 20 miles north to a small island (not Grand Island) in the Niagara River near N. Tonawanda, N. Y. Principal industry of the island during the war years was a fabrication plant for LCT's (Landing Craft Tank). Associated's 23-trailer loading dock is within the confines of the principal hangar-like structure of the one-time boat plant and the main repair shop is in an adjacent building that once sent completed hulls down the marine railway. Numerous smaller buildings house the tire shop, machine shop, wood working shop, power plant and even provide inside storage for a considerable number of tractors. In addition there is ample parking space. It's a neat trick if you can find a surplus island in your vicinity.

In Canada, where the transport dollar must sometimes stretch even further than in our own country, we found large for-hire operators relying to a large extent on

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flat-bed trailers with shop-built wooden sides and tarpaulin tops—admittedly an economy feature. But one such operator had a really complete central shop where everything from complete engines to batteries were being rebuilt. The shop, at the moment, wasn't too much to look at (a new one is on the way), but equipment, stock and manpower was good. The battery rebuild shop was paying off to the tune of completely rebuilt 19-plate, 6-volt batteries for $7.50, a little less than half the prevailing price for new ones. Experience showed they lasted just as long as the virgin jobs, and could be rebuilt twice for a three-life cycle.

The same outfit also sported a GMC tractor, vintage of about 1923 but fitted some 6 years ago with a hydraulic lift on the fifth wheel, salvaged from an old dump body and adapted by the shop. Result was a yard jockey similar to the new job recently announced by a Detroit builder. For all of its past 6 years this tractor had been making a one-man-in-the-cab job of jockeying trailers about the yard.

All along the line we found a goodly number of for-hire carriers still battling the weight-saving features of light metals for trailers vs. higher initial and higher upkeep cost. Virtually all were using some light-weights, a few had gone the whole hog. But as to which type light-weight was best, forgive us for still placing a value on our collective neck. Suffice it to say the controversial opinions were strong.

Most unusual for-hire operation that we saw was a single organization operating a compact four-state common carrier line, a local for-hire transfer, a railroad door-to-door service, a heavy hauling and rigging operation (one 100-ton capacity goliath was so big it couldn't move empty without a special permit), a bulk sand haul and a rather extensive lease operation. Maintenance for all of its 800 vehicles (except the far ends of the common carrier run) was performed in a single shop. Various operations were handled on day shifts, others at night with the shop in full speed 24 hours a day.

Newspapers

TWO newspaper fleets, with widely different operations, deserve special mention. One, in Canada, faced with delivering both daily and weekly editions over routes as much as 300 round-trip miles, was making some interesting experiments, both in body and chassis design. Most intriguing was a three-engine model currently under construction but concerning which no publicity is yet in order. The project is based upon the premise that large vehicles are both more costly and less easily attainable in their area than in most sections of "The States." Hence they reason that a concentration of power using standard high-volume equipment should pay off with a good safety factor against road failures to boot. More details a little later on. With regard to bodies, the company has for years been building its own with special features, particularly a protected rear platform. The war years forced substitution of wood for metal but plans are afoot for still more efficient metal models to come.

The other newspaper fleet, whose identity must of necessity be held in abeyance, had one cardinal feature which is believed unique in its field. The fleet superintendent had an absolute and autonomous rule over what happened to the papers once they left the loading dock. Unhampered by the whims of other department heads, he sets his own schedules, handles all phases of the delivery operation as he sees fit. To do the job he was given 52 trucks of which 45 are large-bodied jobs of a light standard make, plus an allowance of a fixed amount for each truck for total operating expense. And here's the pay off! What he does not spend, he pockets. He gets no salary.

Department Stores

WE found the department store fleets operating along fairly normal lines with emphasis, as usual, being placed on per package delivery cost as the final yardstick of efficiency. From the purely fleet-

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Tri-State Trip

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man's point of view, we always find this a little discouraging for it obviously includes salaries, wrapping room and handling charges and, finally, the cost of the truck operation all lumped together. But we did find more and more emphasis being placed on truck efficiency, particularly from the standpoint of selection. One large operator was concentrating on the metropolitan type bodies and had proved to his own satisfaction that under his particular load and terrain conditions, the smallest ½-ton chassis did the job equally well, and at less cost, than the heavier models usually used with this type body. This same operator, being blessed with an almost new fleet in 1940 and 1941 was finding that with top-flight preventive maintenance he was getting by with carbon, valve and ring jobs and virtually no major overhauls despite a reading on many of his vehicles close to the 100,000-mile mark. His goal was to get them all replaced before additional work was necessary. From an appearance standpoint the vehicles were in the top bracket.

Something new, at least to us, had been added in this field. The man in charge of a large consolidated package delivery showed us an elaborate chart which he had drawn up showing expected *frequency of delivery* for any given route with any of various type loads. Thus a quick glance at the chart would tell him that the driver of route 16 should be able to deliver 55 run-of-the-mill packages in seven hours. Obviously, the chart was based on a careful study under actual operating conditions. Now when a driver fails to live up to the standard he is called to task. Big advantage of the chart is that it has union approval. Although it cannot be used to preclude overtime in individual cases, it serves as a guide to efficiency which both union and management recognize.

Petroleum Fleets

JUST as the department store executive usually thinks of delivery operations in terms of cost per package, so the petroleum distributor often uses gallons per hour as the ultimate criterion of the efficiency of his deliveries. It is an interesting figure, when considered in the light that it provides an overall measure of driver efficiency, vehicle efficiency, size of load, rate of dump, frequency of stops, miles traveled, etc. In every case among the petroleum fleets visited, operators produced conclusive proof that in nearly all operations the bigger the load carried, the lower the cost, with the result that most were sitting right on the top legal load limit in their states.

One large Pennsylvania operator told how some of his tanks had just been drilled by state authorities for the purpose of determining tank gage. After the test it's up to the fleetman to repair his own tank which is no little trick, considering the steam cleaning and extensive welding involved. It seems the state has had this authority for many years, but this was the first time it had been used on this fleet.

Heavy Equipment

WE visited a number of state, and municipal fleets and a few heavy construction contractors where we found the problems entirely different from the conventional truck operation. Picture these, to name but a few, lined up side by side in your storage shed or yard: an M-10 4 x 4 FWD with 10-ft. snow blade; a 400 lb., 30-ft. long highway striper; a whole fleet of conventional 1½-ton dump trucks, a somewhat smaller fleet of heavy-duty jobs, a giant Sno-Go rotary plow equipped with a Climax 1187 cu. in. engine for *auxiliary* power, a Fordson tractor with hydraulic controls and a mower rig for highway edging, a 4-cu. yd. diesel-powered drag line; a few 20-ton LaTourneau self-loading scrapers for good measure, and then perhaps three or four asphalt spreading machines.

Now to go a little further, let us assume that the Sno-Go had picked up a rock that had knocked out two of its rotors, that the 10-ft. snow blade had been chipped about 4 in. deep near one end, and that, when this happened, the shock broke off a corner of the crankcase of the FWD's propulsion engine. The dragline may have sprained its boom a bit, two of the asphalt machines were laid up for want of a couple of 8-in. gears, the Climax engine needed

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SINCE THEY'RE BEST WHEN THE TRUCK IS NEW .... THEY'RE BEST FOR REPLACEMENT TOO!

DON'T GAMBLE WITH REPLACEMENT DOLLARS. Designed by the world's leading bearing engineers, made from our own special steel and manufactured to amazingly accurate limits, Timken bearings last longer under the toughest loads. They eliminate friction and hold wear to a minimum. So why take unnecessary risks? Always replace the Timken roller bearings in your trucks with bearings marked "Timken". The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ◯ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◯ AND THRUST —◯— LOADS OR ANY COMBINATION —◯—

Tri-State Trip

(CONTINUED FROM PAGE 184)

its crankshaft metallized to standard, and all of the trucks needed a thorough periodic inspection and a good bit of painting after a particularly hard winter of hauling snow from city streets.

The picture is slightly composite but is based on things we actually saw. Will you then imagine for a moment the type and size of shop thop these fleets would need, and the layout of their stock rooms? Thanks in large measure to surplus equipment from both world wars the New York State Highway Division, for instance, thinks nothing of lining up an array of tools at key locations that include millers, shapers, piston grinders, a whole battery of lathes and a radial drill handling 2-in. bits. Of course that's just the beginning with great emphasis being placed on electric and gas welding equipment, which comes in sooner or later, for nearly every special repair.

Miscellaneous

AMONG numerous other stops, we found a meat packer who surprised us with a fleet of 75 well-maintained trucks in both local and long distance service, many of them with insulated bodies, a few with refrigerating equipment. A dairy chain with 1200 vehicles operating in 50 separate locations, was so completely standardized that they were all using the same brand of tires, gasoline and oil, interchanging spares with amazing efficiency, and building a large per cent of their bodies at a central company-owned plant. A consolidated laundry operation found new equipment scarce and a fleet of 30, 15-year-old Stewarts on their hands concerning which they had been doing some interesting figuring. They found that new equipment of the kind they wanted would cost $2,100 per vehicle. They also found they could rebuild the Stewarts and fit them with new bodies of their own design for $1,200. As an added attraction their chassis would be heavier, their brakes larger, their power output greater. So that is exactly what they were in the process of doing.

END

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Heavy-Duty Oils

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operation, appear to contain considerable quantities of such materials. Naturally the condition becomes more severe as poor ring condition accentuates blowby. This is a relatively new development, suspected before, but now demonstrated, at least in part, by the continued presence of such deposits even with the Heavy Duty oil. It is a problem actively being investigated in practically every refiner's laboratory.

There is a palliative available for this condition, however, and one that has other advantages as well. This is effective crankcase ventilation.

Low Temperature Operation

DOES THE Heavy Duty oil offer any advantages in winter operation? We feel that where its use is advantageous in summer it will also be in winter. Where reasonable precautions are taken to maintain engine temperatures, operating conditions should not differ much between the two seasons and this is particularly true of high-speed, over-the-road truck hauls.

Stop and Go Winter Operation

DOOR-TO-DOOR delivery service, during winter has always been a rather difficult problem to handle. It is somewhat illusive as well, for certain fleets will experience serious sludging difficulties while others do not, or the same fleet may have little difficulty one winter and be almost overwhelmed with "winter sludge" the next. Such differences are almost wholly a reflection of the attention given to service and maintenance of the fleet and the condition of the engines, particularly that of the piston rings. Where these factors are conducive to the formation of winter sludge, infinitely greater benefits can be derived from their correction than could be gained by the use of a Heavy Duty oil.

The soft crankcase and valve chamber muds that are characteristic of this type of service are in most part pure sludges although some emulsion may be present. The materials making up the sludge are almost entirely products resulting

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MICO POWER BRAKE
HY-PAR CYLINDER

Replaces the master cylinder for greater safety on the hyways

Longer life for brake lining

positive Instant Manual pedal control

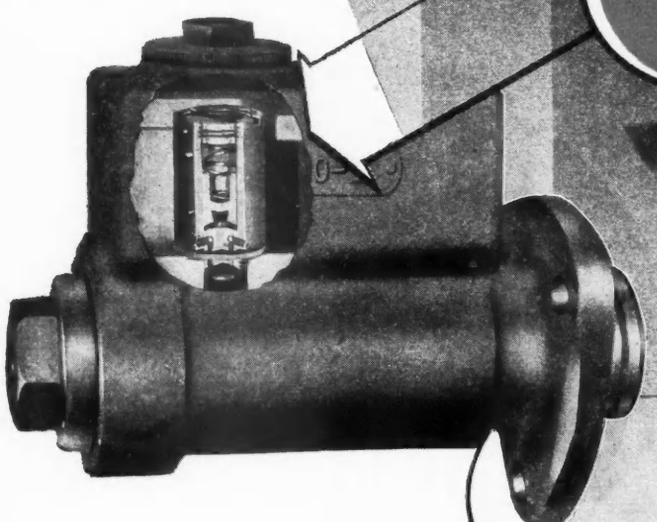
Simple Construction means minimum maintenance

More than doubles braking power

NO BOOSTERS . . .

NO VACUUM

EXCLUSIVE! **This Relief Valve is exclusive to Mico Hy-Par! It allows the excess brake fluid to flow into the oil reservoir at any desired pressure and then to flow freely back into the cylinder when the brake pedal is released.**



Stop when you must . . .
no matter how big the load

The dependable, positive hydraulic power of *Mico Hy-Par* Power Brake Cylinder means smoother, surer stops no matter how big the load. *Mico* means increased safety regardless of temperatures or weather conditions and insures no overbraking on slippery roads.

The braking power is more than doubled when in mid-action, the pressure within the *Mico Hy-Par* unit smoothly progresses from that of a low pressure cylinder to a line pressure up to 2000 lbs. Only Mico with its built-in relief valve can give you this tremendous braking power.

Ask your Dealer
or write for our four-color catalog

MINNESOTA AUTOMOTIVE, INC.

1332 Hennepin Ave.
Minneapolis 3, Minn.

Heavy-Duty Oils

(CONTINUED FROM PAGE 188)

from incomplete or arrested combustion of the fuel. Temperatures are insufficient to cause any appreciable oxidation of the oil. Thus anything that will improve the combustion, that will reduce the amount of arrested combustion products reaching the cranckase or that will effectively remove such products as they reach the crankcase will greatly minimize winter sludge formation.

Jacket temperatures no lower than 160 deg. F, preferably 180 deg. F, will improve combustion efficiency, and reduce the quantity of arrested combustion products forming in the annular space between the piston and cylinder wall.

Jacket temperatures in the range of 160 deg. F. to 180 deg. F. call for good thermostats, accurately adjusted and maintained—too many poorly constructed thermostats are removed and not replaced because of the trouble encountered in keeping them in working order. Some type of by-pass, even if it is only a car heater in the cab, will help by shortening the time of warm up; warm storage is of benefit if feasible. High jacket temperatures have an additional beneficial action in providing higher crankcase oil temperatures, the lower part of the cylinder wall acting as a heater.

An efficient piston ring set-up in good condition is about the best assurance of a minimum amount of combustion products reaching the crankcase, both by reducing blowby and by permitting less arrested combustion to take place in the ring zone.

But we cannot install new rings in every unit at the start of each winter, so something should be done to remove the water and lacquer forming materials that do reach the crankcase from the combustion chamber. Again we must call on the crankcase ventilator. Because of the relatively large amount of idling with the vehicle standing still, and because of the low speed of the vehicle when it is moving, it can be seen that the usual type of ventilating system, which depends upon the velocity of the air passing the end of the breather outlet, is not particularly suited

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Heavy-Duty Oils

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to this type of service. Something at least responsive to engine speed is needed.

With all conditions favorable to a minimum formation of winter sludge the advantage to be gained from the use of a Heavy Duty oil is still a moot question. There is some evidence that it will disperse small amounts of water, thus minimizing the rusting of highly polished crankcase engine parts. It also appears logical that with deposits much reduced, that type of oil should provide the cleaner engine. However this type of service produces such erratic results that frankly the role that the Heavy Duty oil can play has not as yet been clearly defined.

Engine Wear

THE QUESTION of wear comes up with regularity in the field. One can find no fault with the operator who, finding what appears to be abnormal wear in certain units, is inclined to question this, to him, new-fangled lubricant. In the great majority of cases cylinder and piston wear can be traced to dirt; wear of bearings due to this is discussed later on.

Abrasive material can reach the cylinder and piston surfaces with the carburetor air or it can be carried up to those surfaces with the oil reaching them from below. The latter is a reflection of carelessness on the part of the individual servicing the units or is the result of ineffective crankcase air filters. Abrasive material arriving via the carburetor is due to the use of inadequate intake air filters or to their faulty installation or maintenance; in some operations there is so much dust in the air as to tax the capacity of the most effective filler.

No oil additive has as yet been discovered to handle such a situation.

Another cause of top cylinder wear that frequently is not recognized is tied up with attempts to obtain high oil economy by special ring set-ups. If this is accomplished by true hydraulic control it is an asset, but if

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You Wouldn't Use a PASSENGER CAR *TIRE* on a *TRUCK!*

Why Use a *Passenger Car BELT?*

Truck *BELTS* Need *Extra Strength* Exactly the *Same* as *Truck TIRES!*

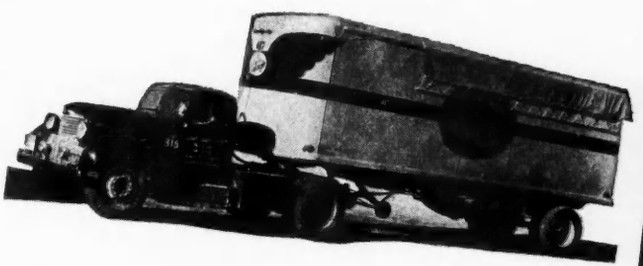
You know, when you think of it, that trucks and buses put a heavier load on *belts* just exactly as they do on *tires.*

A typical truck belt, for example, must carry more than 3 times the horsepower load of a passenger car belt. Trucks and buses run longer hours, change speeds more often, accelerate and decelerate more abruptly and—in many cases—must make far more stops and starts together with much more idling in low gear.

It is precisely because of these extra strains on truck belts that the one belt specially engineered for trucks and buses—the Gates Truck Belt—has *for years* been giving its users fully 50% to 80% longer wear in addition to other savings which are even more important.

For example:—Everytime a belt has to be replaced on a truck or bus, valuable operating time is lost. Every delay for belt servicing or belt adjustment takes its toll from *productive operation* which is your only source of income. Very often in critical instances, even slight delays can cost you a lot of dollars.

Is it any wonder, then, that big operators all over the country—operators who *keep careful cost*



records—are taking the trouble to state *in writing* just how much the specially engineered Gates TRUCK BELT is saving them in belt costs and in increased operating efficiency?

Read the statements on these pages from big, successful operators—several of whom you probably know.

Then, if you want to enjoy those same savings yourself—if you want to keep *your* trucks and buses operating at lowest cost and least *lost time,* call your Gates jobber today and tell him you want the one belt that is specially engineered for trucks and buses — the one belt built with RAYON CORDS—the Gates Truck Belt..

Gates

REG U S PAT OFF

THE MARK OF SPECIALIZED RESEARCH

THE GATES RUBBER COMPANY, DENVER, U. S. A.

World's Largest Makers of V-Belts

T-476

MANY MORE MILES

MARKET BASKET CORP.
Geneva, N. Y.
". . . many more miles of service than even pre-war belts."

80% TO 100% BETTER

ADAMS TRANSFER & STORAGE
Kansas City, Mo.
"Gates Truck Belts are doing an 80% to 100% better job for us."

75% MORE SERVICE

BEARD MACHINE SHOP
San Angelo, Tex.
"We're getting 75% more service than from any other belt we ever used."

WEARS 75% LONGER

WILSON TRUCK CO.
Nashville, Tenn.
". . . gives about 75% longer wear than any other belt we ever used."

70% INCREASED LIFE

LEXINGTON RAILWAY SYSTEM
Lexington, Ky.
"We have increased belt life about 70% with your Truck belts."

80% LONGER LIFE

WATSON BROS. TRANSIT CO.
Omaha, Nebr.
"Our records show 80% longer life for Gates Truck Belts."

Heavy-Duty Oils

(CONTINUED FROM PAGE 192)

the low oil consumption is the result of the compression rings allowing sufficient blowby to hold the oil down, the commonly used term "drying up the top ring" is fully descriptive of what actually happens—and hot dry surfaces are not conducive to lowwear rates.

Cause of such wear is so hard to identify that it is not surprising that it is often charged to the lubricant.

Bearing Failures

IT CAN safely be said that the use of the stable "Heavy Duty" type oils, and the equally stable "Premium" type oils as well, have reduced true bearing corrosion to near the vanishing point; yet hearing failures continue to crop up here and there. Why? Most of these are caused by dirt or by mechanical fatigue. Frequently bearings are found with channels across the face starting from the oil hole and in line with the normal direction of oil flow across the bearing face. Often the surface is covered with pock marks or pits. Such channels and depressions have been caused by abrasive material carried in the oil stream, something the oil is helpless to rectify. yet such damage is often mistakenly interpreted as corrosion. Failures of this type can only be eliminated by preventing the entrance of the abrasive material into the oil by better designed or better serviced air filters on crankcase openings, better oil filters more frequently changed and more attention paid to cleanliness in the service shop to ensure that such material is not introduced into the crankcase at time of oil replenishment or replacement.

Ill advised bearing grooving can in like manner dangerously reduce the load carrying capacity of the bearing, and it sometimes appears as if even the designer has not always fully appreciated their effect on bearing capacity. Prevention of this sort of trouble is a dual responsibility of the engine builder and the service department; probably the latter can do the most by keeping air and oil filters in effective condition.

(TURN TO PAGE 198, PLEASE)

Quick Starts . . . Long Life

WILLARD BATTERIES — Automobile Truck and Bus • Radio • Motorcycle Tractor • Aircraft • Marine • Diesel Stationary — Sold and serviced by Willard Dealers everywhere.

"SAFETY-FILL" COMMERCIAL AND DIESEL BATTERIES

Willard

Dependability • Performance • Long Life

WILLARD STORAGE BATTERY CO. • CLEVELAND • LOS ANGELES • DALLAS • TORONTO

Heavy-Duty Oils

(CONTINUED FROM PAGE 196)

oil servicing equipment and indeed the entire service shop scrupulously clean. Too many shops still have cinder floors.

Some have believed that detergent type oils have contributed to bearing failures through their unique ability to suspend materials. However, this effect is limited to particles in the order of 5 microns or less in diameter, particles that will pass through oil filters so such oils cannot be singled out as the cause for failures due to dirt or abrasives. Any moving oil stream will carry relatively coarse material.

Another fruitful source of bearing trouble, which the oil cannot prevent, is fatigue, usually induced by ill fitting or distorted bearing shells.

It is safe to say that most failed bearings removed from engines have failed because of malfitting.

What has been said up to this point emphasizes the fact that most bearing failures are due not to the oil but to operating and maintenace practice.

However it should not be inferred that hard alloy bearing corrosion is impossible with Heavy Duty and Premium type oils. With too close fits, restricted oil supply, overspeeding or other conditions causing abnormal bearing temperatures, bearings may become corroded. Usually, it is possible to spot such cases by the fact that the trouble does not affect all of the bearings or possibly not all the surface of an individual bearing.

Engine Deposits

HEAVY DUTY oils are not cathartics although they may act in a "gentle manner." The fear that a change from a non-detergent to a detergent oil will result in a sudden loosening of preformed deposits with consequent clogging of screens and oil lines has been grossly exaggerated.

Test experience, Army experience, fleet experience, plus the sale of hundreds of thousands of barrels of this type oil to present day car owners have demonstrated that this fear is unfounded.

END

(Please resume your reading on P. 47)

EVERY *BODY-POUND* SAVED IS A *PAYLOAD-POUND* GAINED

Revolutionary ALUMINUM-MAGNESIUM Construction of ARMORLITE Van Panels Cuts Body Weight Tremendously

This dramatic reduction in deadweight means a profitable increase in *payload*, with more profits per trip for you. What's more, when running empty this weight reduction saves on gas, tires and wear and tear.

ARMORLITE's larger interior gives you more room for bulky loads. And the sleek, streamlined exterior makes a most effective "traveling billboard" to advertise your business.

Find out for yourself about the many money-saving, profit-building features of ARMORLITE van panels. Write today for free illustrated literature, prices and the name of your local distributor.

E·B·Co ARMORLITE TRUCK BODIES

By the World's Largest Builder of Submarines

AVAILABLE THROUGH TRUCK DEALERS EVERYWHERE

Commercial Body Division, ELECTRIC BOAT COMPANY, Groton, Conn.

New Products

(CONTINUED FROM PAGE 67)

P282. Safety Containers

A new line of safety containers, called Safe Guard, is announced by The General Detroit Corp. and its West Coast subsidiary, The General Pacific Corp. They are available in 1, 3, and 5-gal sizes, and bear the approval of Underwriters' Laboratories and Associated Factory Mutuals for storing and carrying flammable and volatile liquids.

The new containers are constructed of terne plate, lead-coated inside and out, and are finished in red enamel. The pouring spout is of non-sparking die cast brass. If tipped over, leakage will be held to a minimum according to Underwriters' specifications. The two larger sizes have a specially reinforced bottom to protect them.

Use Free Postcard for More Details.

P283. Floor Crane

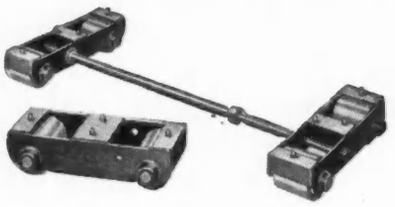
This is a modification of the standard Ruger-1-ton floor crane, and incorporates the same combination of hydraulic piston and cantilever boom as the standard crane.

It utilizes the same two lifting and lowering controls, a hydraulic hand pump for raising the load and a control valve for lowering. While the crane is easily rotated in its mounting socket, a foot brake is provided to prevent rotating or swinging under load. The adjustable supporting member is a part of the crane, and can be swung up and fastened out of the way when truck is in motion. Manufactured by Ruger Equipment Co., Inc., Cleveland, Ohio.

Use Free Postcard for More Details.

P284. Skid-Rol Dollies

Techtmann Industries, Milwaukee, Wis., announces the development of the new "5-Tonner" Model Skid-Rol Dollies with ad-



justable connecting bar for lighter loads than carried on the standard 10 to 12-ton model dollies.

The new dollies carry heavy freight, machinery, dies, etc., a few inches from the floor, reducing possibility of accidents to a minimum. The extension bar, obtainable as auxiliary equipment, is especially valuable to plants using standard boxes or skids for shipping.

Size of each "5-Tonner" dollie is 15¼ in. x 6⅛ in. x 4 in. high—with 3⅝ in. diameter solid steel rollers. Roller bearings lubricated with Zerk fittings, 15 pins to each bearing full length of roller. All bearing surfaces hardened. Frame of structural steel, arc-welded.

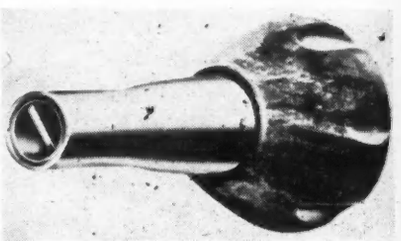
The "5-Tonner" model is obtainable in pairs, or singly; with or without cleats—and with or without extension bars. Capacity: 5 tons per pair.

Use Free Postcard for More Details.

P285. Valve Adjuster

A new, simplified valve tappet adjuster is being distributed by A. D. McBurney, Los Angeles, California.

Made as a complete unit composed of a varnished hard wood handle and polished, tapered, hollow steel shank, with hardened steel inset screw driver, the new "Spee-Just" tappet adjuster is suitable for work on all overhead valve engines.



The hollow shaft fits over the valve adjusting nut, enabling the inset screw

(TURN TO PAGE 276, PLEASE)

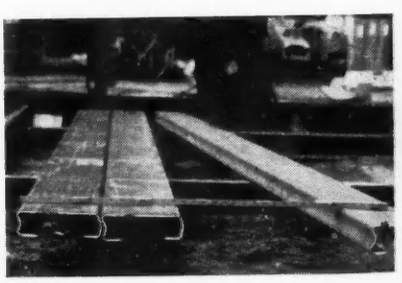
P286. Nailable Steel Truck Flooring

A NEW nailable steel flooring designed to reduce maintenance costs for trucks and trailers is announced by the Great Lakes Steel Corp., Detroit, a unit of National Steel Corp. The new floor consists of steel channels between which ordinary nails may be driven into grooves of curved steel where they are held more securely than when driven into wood.

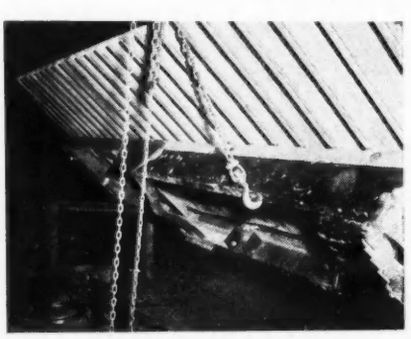
The 8-in. wide channels are formed from a high-tensile, low-alloy steel available in 6, 10 or 12 gage. The channels are laid across the width of the vehicle and welded to the underframes, with a space left between the channels to provide the nailing groove. The grooves are filled with a self-sealing composition which prevents loss of bulk freight, such as sand and grain.

Because no underframe or outriggers are needed with the steel flooring, an overall weight reduction is usually possible. A special release to COMMERCIAL CAR JOURNAL indicates that the weight of steel floor installed in a 30 x 7½ ft. trailer body and welded direct to the frame is 3034 lb. This compares with 3298 lb. for a 1¾ in. wood floor with steel strips, ⅜ x 4 x 4 in. angle iron rub rail and 4 x 6 in. cross sill bolsters. If heavier gage steel flooring is used, the weight is virtually the same as the wood job.

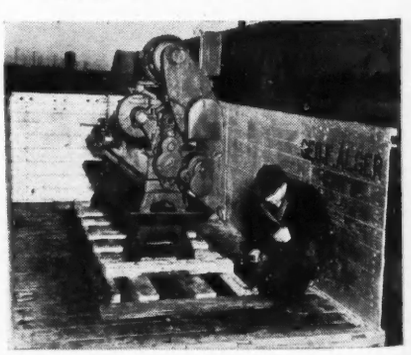
Useful life of the steel flooring is estimated as from 20 to 25 years.



Channels are supplied to builder in choice of 6, 10 or 12-gage weights



Channels, welded to trailer frame, require no reinforcement for overhang



A lathe is nailed in place. Grooves have 4 times holding strength of wood

for today's multi-power demands...

A COMPLETE LINE OF 6-CYLINDER, HEAVY-DUTY

WAUKESHA ENGINES

...from 320 cu. in. to 1197 cu. in. displ.

Dependable Power for

Trucks • Buses
Tractors • Fire Trucks
Rescue Squad Cars
Airport Crash Trucks
Package-Delivery Cars
Off-Highway Tractors
Pumps
Electrical Machinery
Industrial Equipment
Mining • Oil Fields
Earth-Moving Equipment
... and many other heavy-duty requirements.

● The Waukesha Engines shown here are outstanding in every detail of design, construction and performance.

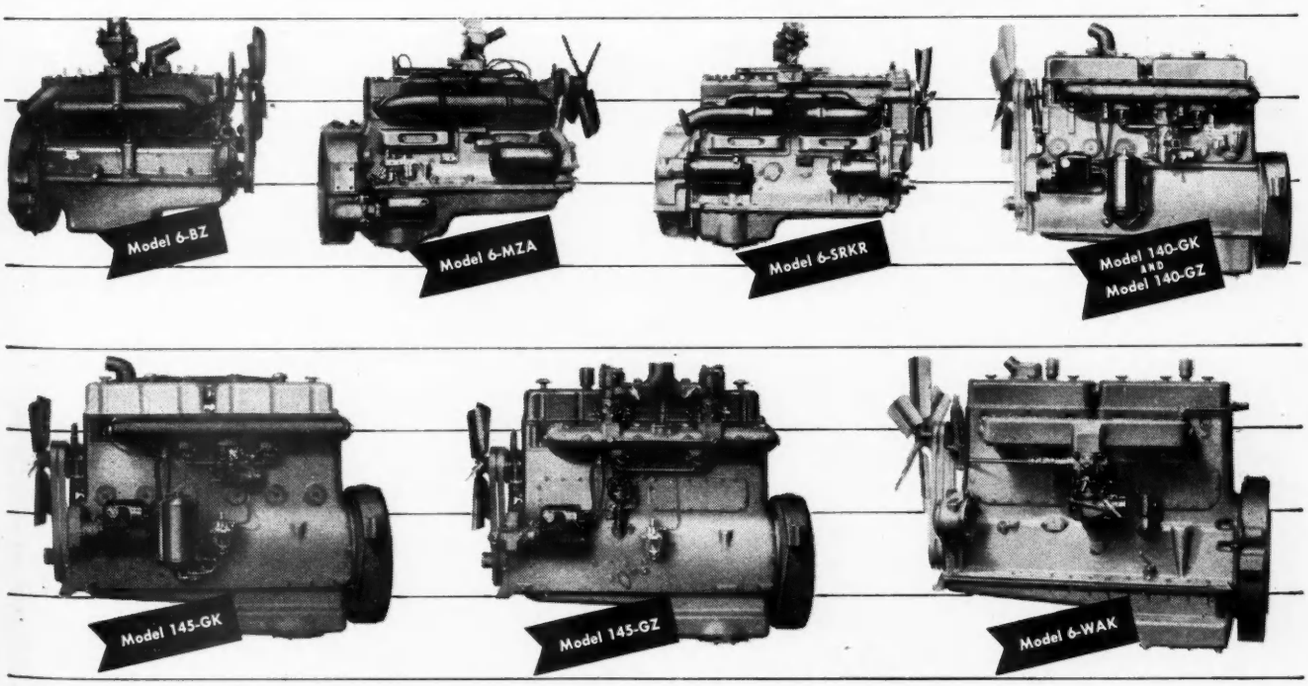
High power per cubic inch displacement ... smoothness and acceleration under load ... high fuel economy ... easier and more economical maintenance ... long life with low upkeep ... have made Waukesha Engines world famous for their ability to deliver continuous, heavy-duty service—both automotive and industrial—over all sorts of terrain, and in all climates.

Write for descriptive bulletins on any or all of these engines. Inquiries concerning your specialized power requirements are also invited.

SIX CYLINDER ENGINES

Model	Bore and Stroke, In.	Displ. Cu. In.	Max. HP.	RPM
6-BZ	4 x 4¼	320	103	2800
6-MZA	4¼ x 4¾	404	125	2600
6-SRKR	4⅝ x 5⅛	517	125	2250
140-GK	4½ x 5½	525	142	2200
*140-GK	4½ x 5½	525	177	2600
*140-GZ	4⅝ x 5½	554	182	2600
*145-GK	5¼ x 6	779	232	2400
145-GZ	5⅛ x 6	817	240	2400
6-WAK	6¼ x 6½	1197	235	1800

*Equipped with counter-weights and vibration dampeners



WAUKESHA MOTOR COMPANY, Waukesha, Wisconsin

NEW YORK • TULSA • LOS ANGELES

New Products

(CONTINUED FROM PAGE 274)

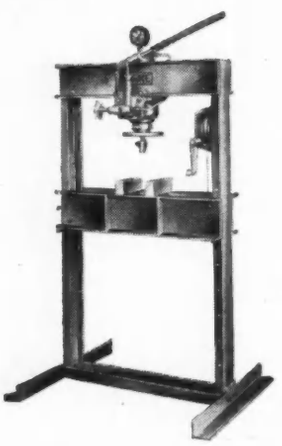
driver to engage and stay solidly in place while the mechanic carefully sets tappets for clearance.

The tool increases the speed and accuracy of such adjusting work and eliminates all screw driver fumbling on the jumping tappets of an idling engine. The low cost of $1.25 makes it an attractive hand tool for mechanics.

Use Free Postcard for More Details.

P287. Hydraulic Press

A new 25-ton hydraulic press known as the Model 25H, is announced by Dake Engine Co., Grand Haven, Mich. This press meets the need for an intermediate size press, and complements the large variety of Dake Presses available up to 75-ton capacity.



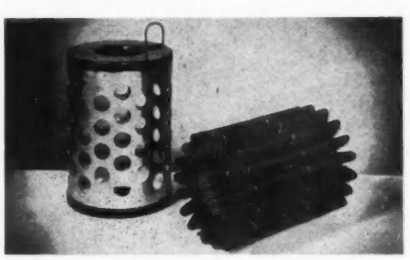
This new press features a fast-moving ram which saves considerable operating time. The extra speed of operation is obtained by using an extra-large pump.

The press is constructed with arc-welded steel channel, reinforced throughout. A large space between uprights allows the handling of work up to 33½ in. in diameter.

Use Free Postcard for More Details.

P288. Filter Cartridge

The new Drico longer-life replacement cartridges are available in all sizes for use in 95 per cent of the various types of lubricating oil filters now being used.



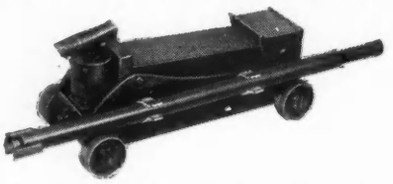
In addition to the highly efficient lasting filtration, down to one micron resulting from the use of wool felt media, a major feature in the Drico cartridges is their cleanability. The filter media may be removed from its housing and cleaned in gasoline or in any other commercial cleaning solvent, which restores the cartridge to its original degree of efficiency, eliminating the need for procurement of a new cartridge.

The deep corrugated construction gives maximum possible filter area, resulting in the maximum possible service period between cleanings, and insuring long life before loading up, the manufacturer states.

Use Free Postcard for More Details.

P289. Portable Jack

The new "Beetle" under-car jack is a development of the Zamax Mfg. Co., Haverstraw, N. Y. It combines in portable form, the convenience of the heavy curb-jack used by service stations and the



safety and stability that only an under-car jack can give. All steel, it is a compact, easy-to-handle unit that can be stored readily in the luggage compartment . . . used for tire-changing and other light work in every service station.

Detachable pump handle telescopes to 28 in. and clips to side of the jack for storage . . . extends to 48 in., projecting well beyond car bumper when jack is in use. Key in end of handle turns bleeder screw to lower the jack.

Use Free Postcard for More Details.

P290. Tire Guard

New safety device for operators of trucking fleets is the above tire inflation safety cage, designed and marketed by The Firestone Tire and Rubber Co. By

using this 2-in. steel tubing cage, tire repairmen are protected from danger should the ring blow off after a tire has been newly mounted. The entire unit weighs 425 lb and handles tires up to 1200-24 sizes.

Use Free Postcard for More Details.

P291. Distributor Tester

A newly designed distributor tester, built by The Electric Heat Control Co., Cleveland, Ohio, makes a complete test of all working parts of the distributor, including the condenser and the vacuum advance unit.

Tests include checks on the condenser, cam angle, mechanical and vacuum spark advance, contact point resistance and bounce, open connection or short in pigtail connection, worn shafts and cams, point synchronization and Ford vacuum brake as well as spark timing.

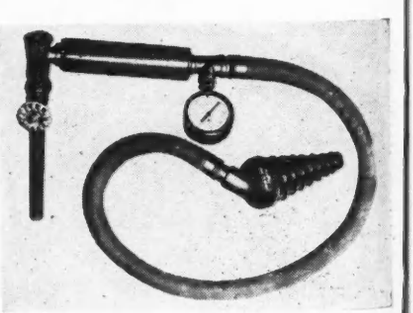
A new feature of the D5 tester is the built-in oscillator type condenser tester. This unit will make a complete test of the condenser for leakage, shorts, capacity and series resistance. The tester provides 500 volts for checking the insulation in the distributor and the sensitive series resistance test may be used to check the point resistance, open or poor connections in pigtail leads.

The unit is direct driven, has unbreakable plastic case meters, easily read figures on meters. It is available in bench model or with stand.

Use Free Postcard for More Details.

P292. Flushing Device

White Engineering & Mfg. Co., Inc., Rochelle Park, N. J., has introduced a radiator flushing attachment known as the White Radi-Flush.



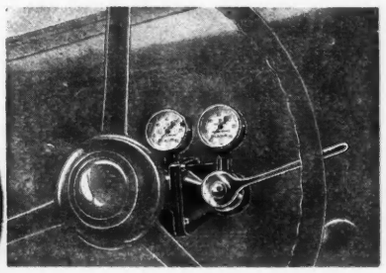
The Radi-Flush was especially designed for reverse flushing of truck and tractor radiators and blocks—using steam and chemicals.

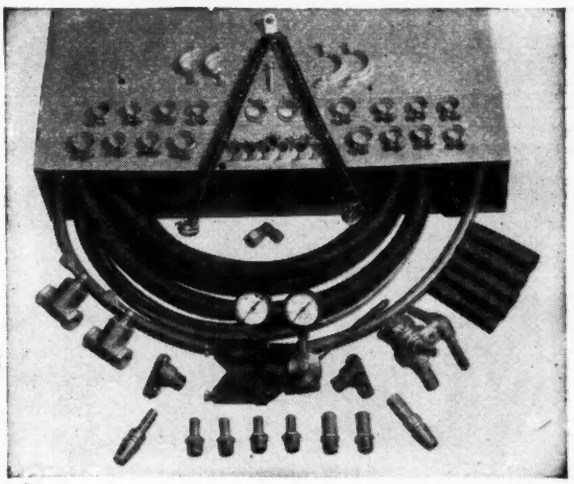
Use Free Postcard for More Details.

END

(Please resume your reading on P. 68)

LATHAN Engineered





HAND CONTROL SET

EVERYTHING complete to equip any tractor for vacuum trailer brake control

1. NO. O-922V ADAPTABLE for installation on any Tractor to control any make of vacuum brakes on any trailer. Can also be installed to provide independent operation of trailer brakes by either foot pedal or hand control valve.
2. SIMPLEST, most durable construction—easiest installation—fastest, most dependable operation.
3. LATHAN NO. 35VG HAND VALVE, most efficient hand control valve made, included in set, with two (2) vacuum gauges.
4. COPPER TUBING of large diameter for faster trailer brake action—¾" tubing for vacuum lines, ½" tubing for control line—and plenty included in set.
5. EASY TO INSTALL—Special Check Valve and Dash Union simplifies installation and eliminates unnecessary pipe fittings. Detailed installation drawing permits mechanic to install complete set in minimum time. Every nut and bolt needed for installation is included in set.

LATHAN Features Mean FASTER ACTION Freedom from Trouble

Ask your local LATHAN Distributor for a demonstration of these units, and write for complete LATHAN Power Brake Catalog.

LATHAN UNI-VAC HYDRAULIC POWER UNIT

A GREATLY SIMPLIFIED, more efficient modern unit for powering foot brakes of any motor truck equipped with hydraulic brakes. Multiplies brake effectiveness 2½ to 4 times at normal pedal pressures. Smooth, uniform, powerful brakes without fatigue. Graduated control—operator retains "feel" of brakes. Easy installation. No maintenance, no lubrication, no adjustments either during or after installation. Write for folder.

LATHAN CO., Inc., Mfrs. (Since 1911)

3600 Military Ave., DETROIT 32, MICH.
Tanforan Ave., SOUTH SAN FRANCISCO, CALIF.

Subsidiary of

KELSEY-HAYES WHEEL COMPANY
DETROIT 32, MICHIGAN

LATHAN

VACUUM POWER BRAKE SYSTEM

Service Frequency

(CONTINUED FROM PAGE 36)

Oil control rings are now being used that have better control of lubrication to cylinder walls yet prevent excessive oil consumption by remaining active and free from carbon formation.

Better balanced crankshafts assure smoother engine operation, eliminating the possibility of breakage. At the same time we have better control of surface hardening of bearing surfaces resulting in longer shaft and bearing life with less maintenance.

Carburetors and engine speed governors have been simplified and improved for more economical operation and easier and less frequent maintenance.

A pressure lubrication system has been refined by redesigning the channels which are cast integrally with the crankcase and the addition of better control valves and oil filtration, all with the purpose of increasing engine life and decreasing service requirements.

In the field of engine cooling, much attention has been given to radiators, the engine block, water passages, water pumps, and thermostats for temperature control. The mounting

(TURN TO PAGE 280, PLEASE)

NO MORE WEIGHT *but* A LOT MORE STRENGTH

with REPUBLIC HIGH STRENGTH STEELS

Specially designed for hauling rock and other heavy materials, this 15-ton quarry-type rear dump truck needs great strength and stamina to withstand the hard usage common to off-the-highway haulage. The body must be tough and must stand up under the impact and abrasion of rock during loading from large shovels—during traveling and dumping. And, Republic High Strength Steels provide these qualities, *without excessive weight.*

Republic's three different High Strength Steels—Republic ALDECOR, Republic COR-TEN and Republic DOUBLE STRENGTH—were developed for severe usage such as this. They provide not only high strength—a minimum yield point of 50,000 pounds—but also four to six times the atmospheric corrosion-resistance of ordinary structural steel in the unstressed condition.

Designers and builders of mobile equipment who want to increase strength *without increasing weight*—or who want to *save* weight without scarifice of durability—should investigate the possibilities of Republic High Strength Steels. Booklet 445 will bring you the full story. Write for your copy . . . and for metallurgical assistance, too, if you desire.

REPUBLIC STEEL CORPORATION
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Export Department: Chrysler Bldg., New York 17, N. Y.

Republic
REPUBLIC STEEL
REG. U. S. PAT. OFF.
HIGH STRENGTH STEELS
ALDECOR · COR-TEN · DOUBLE STRENGTH

Other Republic Products include Carbon, Alloy and Stainless Steels—Sheets—Plates—Pipe—Bars—Wire—Bolts, Nuts and Rivets

Service Frequency

(CONTINUED FROM PAGE 278)

of radiators using shock absorbing materials protects radiator cores from road shocks and damage. Increasingly, radiators are being fitted with pressure caps both to prevent leakage and to permit higher operating temperatures under full control. Water pumps of the self-sealing type have eliminated service entirely during the period of their normal life. The thermostats currently being used not only give better cooling but are themselves considered trouble-free today.

Development of clutch design has included full automatic adjustment features which require no maintenance until the unit is worn out. Lining materials are longer lasting. Consideration has been given to the driver by reducing the pressure necessary on the clutch pedal for release or engagement with consequent better operation.

Rear axles have gone through many radical changes in the last few years. Ring gears and pinions are now commonly of the hypoid type giving greater tooth contact and

(TURN TO PAGE 282, PLEASE)

MARYLAND'S POULTRY GETS TO MARKET

• FRESH • SAFELY • PROFITABLY

...BECAUSE

THERMO KING

MECHANICAL TRUCK REFRIGERATION

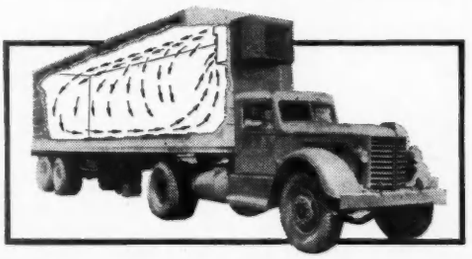
IS OUT IN FRONT!

"We have moved well over 500 loads of frozen chickens and frozen foods since installing Thermo King," writes C.M. Hogarth, Executive Vice President, Victor Lynn Lines, Inc., of Salisbury, Maryland, "and we have nothing but the highest praise for the service Thermo King has given us. We have even loaded chickens on Friday for delivery on Monday, without a single instance of spoilage or loss. In our book, that's a ***real*** refrigeration job!"

Mr. Hogarth's comments express the feeling of thousands of truckers who have discovered how to transport perishable cargo safely—with THERMO KING.

No matter what the ***outside*** temperature may be, Thermo King automatically holds the ***inside*** temperature even and constant . . . it stays where you set it.

We'll gladly furnish detailed information concerning your individual needs.



Thermo King units, light and compact, are easily installed in any straight truck or trailer. Forced circulation insures ***complete*** protection of every perishable cargo . . . meat, frozen foods, dairy products.

U. S. THERMO CONTROL CO.

44 SOUTH 12th STREET MINNEAPOLIS 4, MINN.

LARGEST BUILDERS OF MECHANICAL TRUCK REFRIGERATION

Service Frequency

(CONTINUED FROM PAGE 280)

strength. Double reduction rear axles are increasingly used on heavier models. Two-speed axles have been developed to provide greater power for certain operations at the same time that high speed is available for other operations. Rear axles in our trucks today are far superior to those used in the past and we know that longer life is being obtained with less servicing.

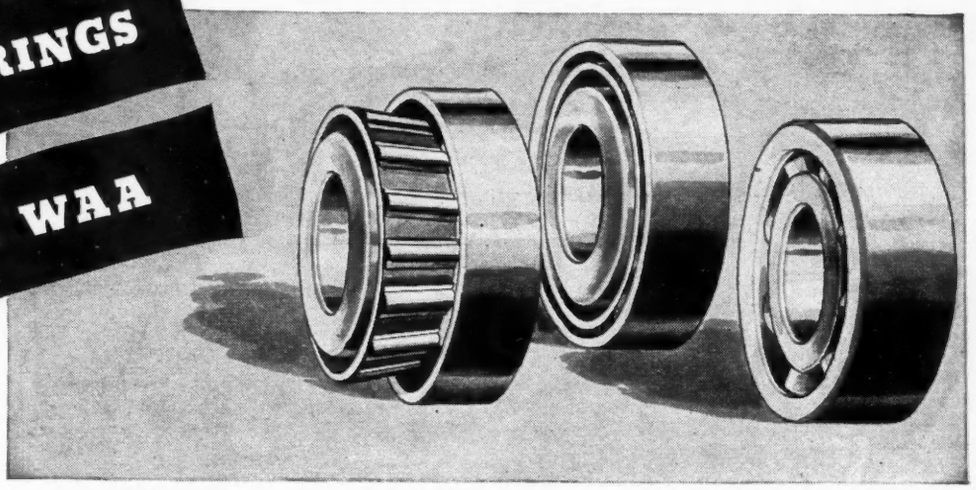
As a result of constant studies of steering geometry and steering gear assemblies there have been major changes in the design of steering gear boxes. Ground gears are being used instead of plain cut gears with either roller or ball-bearings; many have automatic or self-adjusting features, resulting naturally in less frequent servicing.

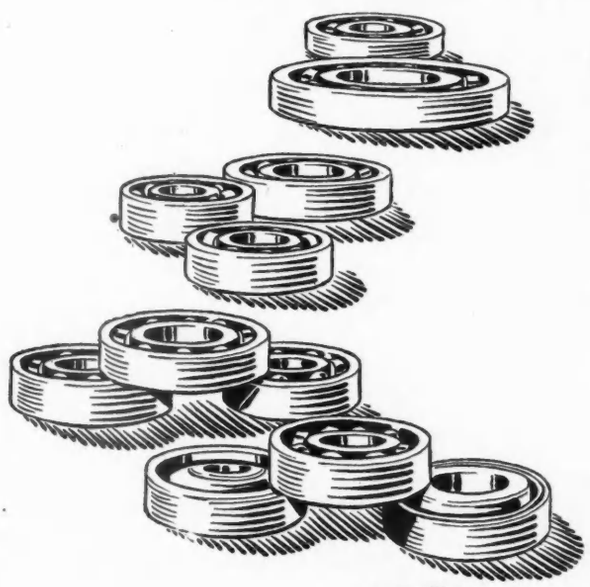
Great forward strides have been made in providing better brake systems. We have gone from the straight mechanically-operated brake requiring full physical effort for actuation, to hydraulic, vacuum power, electric, and air-actuated brakes. Each style of which has been continually improved for easier and safer operation.

(TURN TO PAGE 284, PLEASE)

START ROLLING ON BEARINGS FROM WAA

SET YOUR OWN PRICE IN SEALED BID SALES





Get your bearings from the $18,000,000 stock now being sold by WAA. Friction and anti-friction bearings and components in all sizes and types are included in this stock. Many sizes are available in production-run quantities. Set your own price on what you need and submit your bid. Get all pertinent information from your nearest Customer Service Center or WAA Regional Office—go there to make your own inspection.

EXPORTERS! Your business is solicited. Much material which is surplus in the United States is urgently needed or is readily salable in other countries. Watch for other offerings, many of them may be of interest to your clients.

Sales of bearings will be held at frequent intervals. To receive information on future sales, write, wire or phone the Regional Offices listed below asking that your name be placed on their mailing lists.

CINCINNATI • CHICAGO • ST. LOUIS • DETROIT
KANSAS CITY, MO. • CLEVELAND
LOS ANGELES • NEW YORK

OFFICE OF GENERAL DISPOSAL

WAR ASSETS ADMINISTRATION

GOVERNMENT WAA SURPLUS

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago Cincinnati • Cleveland • Denver • Detroit • Grand Prairie, Tex. • Helena • Houston Jacksonville • Kansas City, Mo. • Los Angeles • Louisville • Minneapolis • Nashville New Orleans • New York • Omaha • Philadelphia • Portland, Ore. • Richmond St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Tulsa

1186

Service Frequency

(CONTINUED FROM PAGE 282)

The safety factor of more square inches of brake area per hundred pounds of load carried is being steadily increased along with the design of brakes.

Spring breakage and failure will soon be a thing of the past due to better spring construction and better spring suspension, using rubber mountings and bearings of materials far superior to the previously customary bushings. This makes for easier riding, less shocks to the load and truck, and consequently longer life and lower cost operation.

We agree that there is room for improvement. We have not reached perfection and probably never will. But we are striving to meet the ideal by exerting every effort toward the development in design and manufacture of trucks that will be accepted by the public and that will deliver the greatest number of miles of operation with the least possible servicing.

END

(Please resume your reading on P. 37)

Classified Advertisement

WANTED: West Coast truck body distributor, must have approx. 2000 sq. ft. assembly space. Wide distribution necessary. Box 11, Commercial Car Journal, Chestnut & 56th St., Philadelphia 39, Pa.